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# PODSPEAKERS HAVE LANDED



**PODSPEAKERS**   
BY SCANDYNA



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# 09.15



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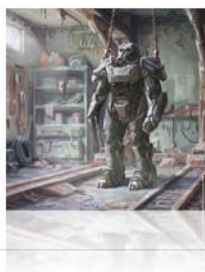


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● Make a handlebar bike rack ● Play app hangman ● Go on a drone-guided tour



## TOP 10 OF EVERYTHING

Looking to buy something but need a bit of advice? Turn to our *Stuff* Top Tens: our expert listings of all gadgetry, from **p114**

**HOT  
BUY**



**Jawbone UP3**

★★★★★

Meaningful data in a stylish package  
**p125**





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\* Call cost 7p per minute plus your phone company's access charge.

# WELCOME



If you're a geek of a certain age you may remember RealPlayer, a technology that preceded YouTube and Spotify in streaming audio and video. For a while RealPlayer ruled, with over 85% of everything streamed on the internet using its tech. At that peak, a young man named Tony Fadell went to work for RealNetworks, bringing with him an idea and a design for a stylish MP3 player. But the company was based in Seattle, where it rains a lot, and Tony preferred the weather in California. So he left for a company down south, and a year later that company announced Tony's MP3 player to the world: the iPod. Sometimes, a bit of rain can be a real nuisance.

But while bad weather can cause the occasional hundred-billion-dollar missed opportunity, it does have its upsides. After all, if it was sunny and dry all the time, we wouldn't have an excuse to spend the whole winter indoors, exploring the ever-expanding multiverse of video games. We'd be too busy growing avocados and waterskiing to discover new planets, battle supermutants or join the Dark Side (p42). We'd be cleaning the pool when the shops were open, thereby missing the greatest gadget bargains we've ever seen (p82), and we'd have too much sunscreen on our hands to upcycle old tech into new gadgets (p104). So, if the weather's great, all well and good. But if it's rubbish... well, that's when the fun really starts.

Will Dunn, Editor / willd@stuff.tv / @willydunn



**THIS MONTH IN STUFF'S DIGITAL EDITION**

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 ■ Gnarly videos from our action cams group test

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### I MADE MUSIC HISTORY...

...by becoming the worst musician ever to play at Abbey Road's Studio 2.

In a room previously graced by The Beatles, Kate Bush and Radiohead, I tinkered with Yamaha's new battery-powered Reface mini keyboards (see p28). They allowed me to stumble towards something resembling a Kraftwerk B-side, before I loaded up on Abbey Road facts. Did you know it holds one of the world's largest collections of microphones? Check out the virtual tour: [insideabbeyroad.withgoogle.com](http://insideabbeyroad.withgoogle.com)

**Mark Wilson, Features Editor**



### I FIRED AN UZI...

...two inches from the nose of a foul-mouthed cockney geezer who was

sitting in the driver's seat next to me. He didn't even flinch. Not my usual Wednesday morning, but I was playing episode two of *The London Heist* with Sony's Project Morpheus VR headset and a pair of Move controllers, taking out motorbike-riding goons and filling the fuel tanks of chasing vans with hot lead. And yes, of course I turned the gun sideways. I'm not a complete amateur.

**Tom Wiggins, Deputy Editor**



## OUR MONTH

What this issue has brought us by way of geekery



### I USED A WATCH TO BUY A SHOE

Was I robbed of my footwear while hiking in the Picos de Zapato mountains and

forced to trade my Rolex for a pair of loafers in the nearest village? Sounds plausible, but no: I sauntered into a well-known high street retailer (now I think about it, it would have been quicker to just type 'Topman') and paid for a new pair of brogues using Apple Pay – recently launched in the UK – on my Apple Watch. It was slightly more of a faff than using a regular contactless card, but worth it for the raised eyebrows at the counter.

**Will Dunn, Editor**



### I FELL ON HARD TIMES

Going against my own better judgement, I tried out the ZBoard Pro, part

of Firebox's lunacy-added new WTF range. It's an electric skateboard that can hit a terrifying 20mph, and you control it by leaning on pressure-sensitive pads at either end of the board. Having never skateboarded before (I can't pull off the baggy jeans), I'm proud to say I managed a straight line at the speed of a cautious turtle. Not very extreme, I know, but I haven't broken anything, so there's that.

**Esat Dedezade, Staff Writer**





H

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S

T

HOT  
FOUR  
#1

## TECHNOLOGY REPEATS ITSELF

### BBC MICRO:BIT

Doctor Who's K-9 companion, *The Tripods*, Judith Hann – the BBC has always danced on technology's cutting edge. But it was the 1980s appearance of BBC Micro computers in schools that introduced coding to an entire generation of geek groms and helped shape Britain's high-tech global status today. And now the BBC is looking to repeat the procedure with this micro:bit, a Raspberry Pi-like barebones computer that is 18 times more powerful than the original Micro, 70 times smaller and 817 times lighter. It's powered by microUSB or a battery pack, with 25 red LEDs, two buttons and low-energy Bluetooth. Onboard accelerometer and compass sensors can be leveraged using everything from a basic browser-based

block-builder interface up to Javascript or C++, and the micro:bit will work with other electronics such as Arduino, Raspberry Pi or kits from Technology Will Save Us – more on those opposite. One million of these little blighters will be given out to Year 7 children for free, after which it'll be made available to buy for us Year X kids.

**Ashot as...** the Internet of  
Child-Built Things  
from **Efree** / [microbit.co.uk](http://microbit.co.uk)

#### Live begins at zero

Right from the get-go we're learning about coding: the three input/output connectors are numbered 0, 1, and 2.

The two others are a power source for any sensors or displays you wish to hook up.



U

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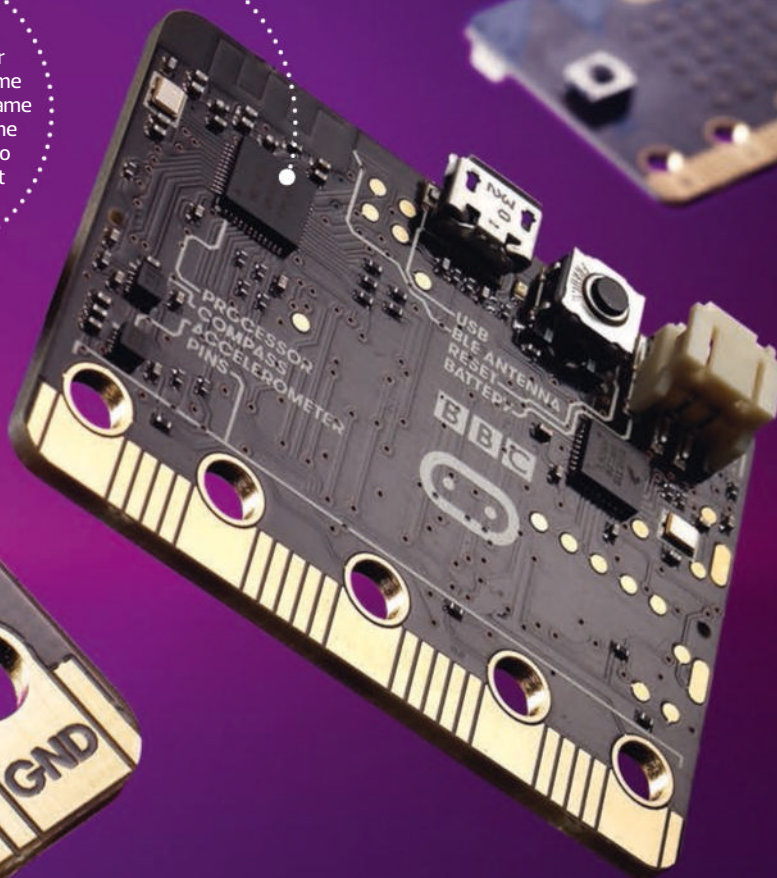
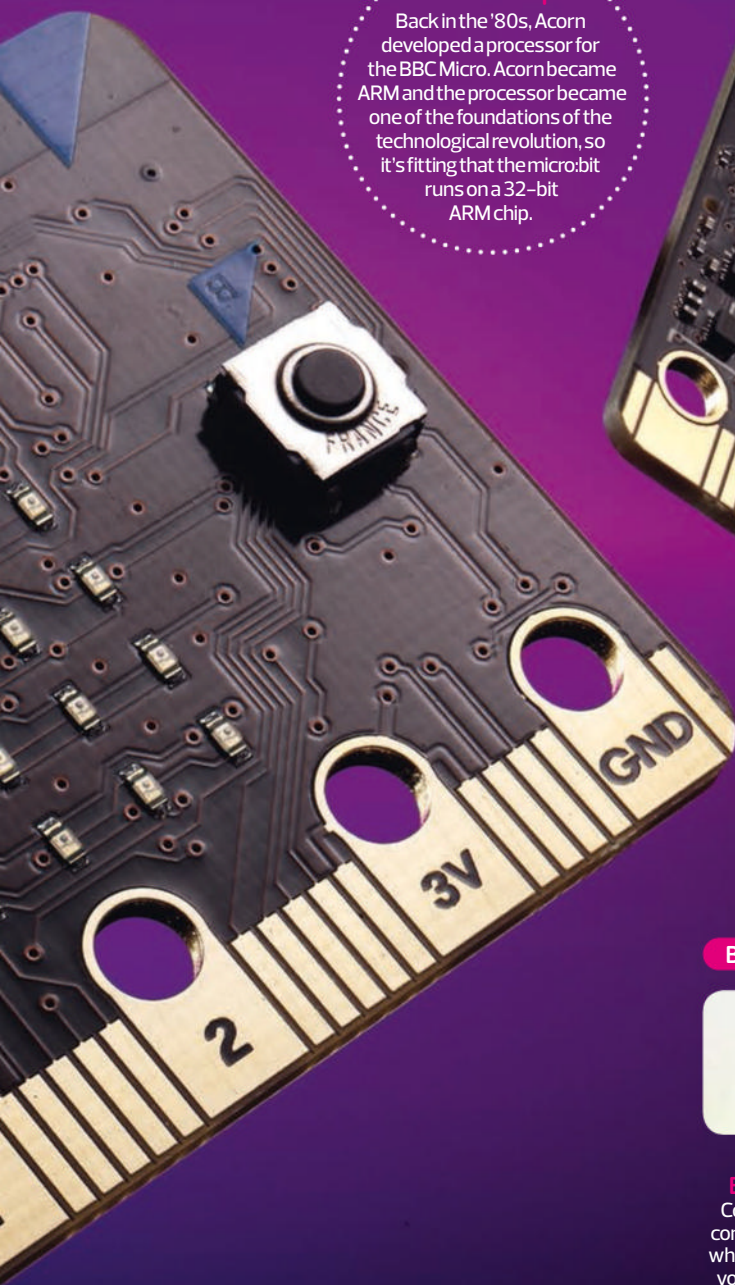
F

24 PAGES  
OF THE BIGGEST  
STORIES FROM  
PLANET TECH



### Efficient chips

Back in the '80s, Acorn developed a processor for the BBC Micro. Acorn became ARM and the processor became one of the foundations of the technological revolution, so it's fitting that the micro:bit runs on a 32-bit ARM chip.



### BECAUSE KIDS JUST LOVE SPORT, MUSIC AND BOTANY



#### ELECTRO BASKETBALL

Conductive dough completes the circuit when you 'slam dunk' your ball, increasing your score on the micro:bit's LEDs. The football goal version might be more fun for the sausage-fingered.

##### You'll need

- Electro Dough Kit (£15 / [techwillsaveus.com](http://techwillsaveus.com))
- An appropriately gaudy vest.



#### AIR GUITAR

The making of the amp and speaker needs a soldering iron, something we're not allowed now, let alone in Year 7. Once teacher's done the hot bit, the guitar becomes a movement-based volume control.

##### You'll need

- DIY Speaker Kit (£26 / [techwillsaveus.com](http://techwillsaveus.com))
- To be sure that no-one can see you.



#### PLANT MOISTURE METER

Now that classrooms have to make do with pet plants instead of hamsters, this soil moisture sensor setup is core to the happiness of Alanis the aloe vera.

##### You'll need

- Thirsty Plant Kit (£20 / [techwillsaveus.com](http://techwillsaveus.com))
- To be a suck-up if you want to take her home for the holidays.



HOT  
FOUR  
#2LI'L 'TUBE CUBE  
GOPRO HERO 4  
SESSION

Oh, what a tussle. One board member had to be removed from the meeting after insisting that 50% smaller and 40% lighter was fine, so long as the camera could remain *the same size*. Finally, once everyone else had got their head around it, this new GoPro form factor was signed off. The Session's advantages go beyond simply being smaller than other GoPros: it's waterproof without a case, which is convenient and has a positive effect on audio quality. Yes, it is still compatible with the bazillions of GoPro mount accessories, but there's also a new low-profile mounting option. The battery is not removable and it lacks the 4K recording of the flagship Hero 4 Black, but a matrix of options between 1440p/30fps and WVGA/120fps should be enough for most. Bluetooth and Wi-Fi, a tiny LCD display and a microSD slot complete the Session.

**As hot as...** the original meaning of 'stoked'  
£330 / [gopro.com](http://gopro.com)





HOT  
FOUR  
#3

FIELDS OF VIEW



● STAR VR  
● OCULUS

I CAN SEE  
REALLY NOW  
STARBREEZE STARVR

The human eye is a marvel. This is not news. But it's made very apparent when you watch someone using a VR headset for the first time – they throw their head around all over the place. "Whee!" they say, "I can see all around!" But what they mean is: "Oh, the limited field of view given to me by even this state-of-the-art VR headset means I have to move my head around loads to see everything." A short while ago, a VR headset called InfinitEye came onto the scene, offering a much broader field of view – 210° – but its prospects seemed pale compared to vivid Oculuses and Project Morpheuses... until it was snapped up by games company Starbreeze (*Payday 2*, *Syndicate*), which is simultaneously developing the hardware and a *Walking Dead* game to go with it. Creeping, rasping zombie action seems like the ideal scenario in which to have proper use of your eyeballs' peripheral vision, don't you think?

Ashot as... zombie breath  
£tba / starvr.com

Tracks of  
my ears

Those white markers might look like QR codes but they're actually there to help track the movement of your head. Add some to a controller – a light gun, for example – and it'll be able to track that as well.



HOT  
FOUR  
#4**DEFINITELY  
MAYBE**  
**ALFA ROMEO GIULIA**

Maybe you've always wanted a car bearing the iconic Alfa green clover badge, the *Quadrifoglio Verde*. Or perhaps it's the 3.0-litre Ferrari-developed V6 in this launch flagship, the one that promises 0-62 in 3.9secs. Maybe it's the fact that the brand has stated there will be no lazy self-driving electronics in the Giulia. There will be the torque vectoring system, and an active aero splitter and chassis domain control, naturally. But maybe you're interested in something a little lower in the range – the turbo four-cylinder petrol perhaps; Alfa has promised that even the lowliest Giulias will have 50:50 weight distribution, rear-wheel drive and best-in-class power-to-weight. Probably you just want something that will make all the umptybillion BMW 3-series owners do a little 'Hmm' as you pass them by.

**A shot as... a 125bhp:1 power-to-door ratio**  
**£26k / [alfaromeo.co.uk](http://alfaromeo.co.uk)**







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\*Visible flakes seen at 2ft with regular use.



# PRO PHOTO PIGGYBACKER

DxO One

£500 / dxo.com



The DxO's 1in sensor is over six times the size of the one in the iPhone 6

**Oh, look: a cutesy clip-on camera for your iPhone. It probably has a plastic lens for taking highly stylised pictures of your... Stop!**

● **Look at the price. This thing is serious.**

Inside that nondescript casing is a 1in, backside-illuminated CMOS sensor offering over 20 megapixels. Word in the cameraverse is that this is exactly the same sensor found in the Sony RX100 III, a much praised (but much larger) camera. Sitting in front of it is a fixed-length 32mm lens array that encourages the use of the hackneyed phrase 'marvel of miniaturisation' to describe its bright f1.8 rating,

and video fans are catered for with 1080p/30fps or 720p/120fps.

● **You don't have to attach it to anything.**

The One has its own LCD screen and microSD card storage so is perfectly capable of acting on its own, with the bonus effect of making you feel like a Cold War SOE agent snapping blueprints with one of those sliding Minox cams. But attach it to your iPhone via the lagless Lightning connector and you get the benefit of a live viewfinder and advanced settings using DxO's app. For example, prod the screen to adjust the aperture from f1.8 to f11, the shutter speed from 15s to 1/8000s or the ISO from 100

to 51,200. The connector has 60° of swivel both up and down.

● **Serious camera, serious formats.**

By default, the One saves its pics to microSD in RAW format, but it simultaneously plonks them into Camera Roll on the phone for your instant social gratification. DxO is an image processing specialist – which is why they decided they could slam a small, complex lens right up against a big sensor and get away with it. Their OpticsPro software happens to be just the thing for processing RAW images, and the first DxO One buyers will get this free – adding up to about a hundred quid's worth of ta-very-much.

**THIS TINY CAMERA GIVES YOUR iPhone ENOUGH POWER TO RIVAL A DSLR**







## YOUR OTHER SMARTPHONE SUPERCAM ADD-ONS

### ● Sony QX

Sony has a few of these lens-shaped cameras that connect to your phone via Wi-Fi. The smallest has a 1/2.3in sensor, the largest a DxO-matching 1in chip and f1.8 aperture.

from £180 / [sony.co.uk](http://sony.co.uk)

### ● Olympus Air

It's a similar deal from this new Olympus, currently only in Japan and heading abroad later this year. A 16MP four-thirds sensor and lens mount give you a bit more flexibility with a choice of lenses.

from US\$300 / [olympus.co.uk](http://olympus.co.uk)



### Classy cable cutters

## BOWERS & WILKINS P5 WIRELESS

Quality and convenience do not, on the whole, travel together. Which is perhaps why it has taken so long for a wireless version of Bowers & Wilkins' exemplary P5 headphones to appear. Yet here they are, apparently displaying all of the soft-touch leather and high-grade audio components of the originals, but now with oh-so-liberating Bluetooth instead of a cable. Charging is via microUSB – always the classiest of connectors – and there are volume and music control buttons on the right-hand earcup.

£330 / [bowers-wilkins.com](http://bowers-wilkins.com)



### 4K on a (big) budget

## LOEWE REFERENCE UHD

Most TVs, be they £300 or £3000, are not significantly grander than any other. Not so the Reference, with its chiselled metal features and optional floor stand. It's 4K, naturally, on sale now in 55in form with 75in and 85in versions to follow. Below the screen is a 2x60W speaker system with virtual surround – no soundbar needed here. Yet cleverer are Loewe's various smart systems, based around its 1TB hard drive. DR+ Follow Me is one such, whereby you can pause the action then pick it up in another room. The Smart tv2move feature, meanwhile, lets you send TV images to your smartphone or tablet, or stream the other way from your device to your TV.

from £3800 / [loewe.tv](http://loewe.tv)

# START MENU

The latest startups, crowdfunded projects and plain crazy ideas

KICK-STARTER

## Ink a little, do a lot DROPRINTER

Back in 2012 there came the Little Printer. An Internet of Things pioneer, it was a cutesy thermal printer that spouted useful-ish things such as daily headlines or your schedule. It was hailed as a 'paper renaissance' by romantic idiots such as us, but it failed to convert from a spark to a flame. It's probably Victoria Pendleton's fault. Anyway, here in 2015 the droPrinter is attempting the same thing, albeit this time as a smartphone-connected object. Its inkless cash-register-receipt thermal paper is just the thing for printing out contact details or QR codes or doodles and, without the Olympics to distract us, maybe it'll hit the big time.

AU\$65 / [droprinter.net](http://droprinter.net)



BACK IT

STACK IT

SACK IT

KICK-STARTER

KICK-STARTER

INDIE-GOGO

KICK-STARTER



## AA batteries not included A-BIKE ELECTRIC

It takes a sharp mind to dream of sitting on the pointy end of a triangle, but Britain has no shortage of them. Sir Clive Sinclair was the innovation A-listener behind the original A-Bike; now it's going electric. The compact battery and front-hub motor should provide 16 miles' assistance, as long as you don't get lost in a pothole.

£450 / [a-bike.co.uk](http://a-bike.co.uk)



## Fun, thin, the sun SOLAR PAPER

Doesn't it just seem a bit 'convenient' to you that solar panel technology appears stuck at a point where it'll charge a phone just a little too slowly to make it a replacement for mains electricity? Hmm. Anyway, this range of folding USB solar chargers might be just the thing if you don't mind being played by the hidden rulers of the world.

\$70 / [yolkstation.com](http://yolkstation.com)



## No-armed crowd hit BUDDY

How could you not fund that face? So thinketh all, as it's nearly 200% funded already. Buddy is a characterful telepresence bot that'll serve as a message centre, a video caller, a child entertainer and a mobile sentry. No hands, unfortunately, so lock-picking skills as imagined in the film *Robot & Frank* are out.

\$550 / [bluefrogrobotics.com](http://bluefrogrobotics.com)



## Feeling light-headed LUMOS

Generally speaking, helmets and lights are a good thing. If you're a cyclist, even better. Helmet and lights combined must be better still, and one with accelerometer-triggered brake lights and handlebar-switched turn lights triply so, surely. Only weight and driver confusion issues remain to be addressed.

\$85 / [lumoshelmet.co](http://lumoshelmet.co)



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# G I G A P I X E L

The bigger picture in tech



## A MACHINE GOES MAD

Humans love pattern recognition. It's how we learn to read and recognise. You can turn a tiger upside-down and put it in a hat, and we'll still spot it as a tiger. Also a prime selfie opportunity. But a side effect is that we generate patterns where there are none — "That aubergine looks like Billie Piper!" — and now Google's image recognition AIs have been shown doing the same. Trained by experience to define shapes as dogs or faces, just as children do, the AI will begin to see them in any image if it's given enough goes. A bit like a human staring at some clouds, or an android dreaming of electric sheep.



## NEWS FEED

SHOOT NOW,  
FOCUS LATER

The world is big and time is short, so Panasonic is developing a 'Post Focus' mode for its new DMC-GX8 and DMC-FZ330 cameras. It basically takes a rapid burst shot of every possible focus point, so you can pick later which you want. Clever.



## WIRELESS WISES UP

That Samsung ad where Rita Ora's phone gains about 20% on a wireless charger is one of the saddest things we've seen. Good news, then, that a new powerful wireless charging spec is on the way: 15W is three times the power... but you'll need a new phone.



## UK 2.0 TAKES SHAPE

The British Geological Society has taken last year's Ordnance Survey *Minecraft* renders a step further by creating some with accurate rocky depths. Amateur geologists can marvel at the folds and formations; the rest of us can rope off plots for our uploaded consciousness.





### We ain't rooking you

## EE ROOK

Oh, yeah: network launches branded hardware. Old news, right? Not when you look at the numbers – which are £50 for an Android 5.1 phone using EE's 4G (EE customers get an extra £10 off). Granted, the hardware isn't anything to get terribly excited about. The Rook rocks a 4in display running at just 480x800, with a quad-core 1GHz MediaTek processor and 1GB RAM. The back camera rates at 5MP, while the front is just 0.3MP; meanwhile, the battery is a 1500mAh pack that EE says should provide more than five hours of talk time. It supports microSD cards up to 32GB for your digital gubbins. Is your latest phone ride giving you a headache? Maybe it's time you got off.

from £40 / [ee.co.uk](http://ee.co.uk)

### Or, indeed, womango

## MANGO POINT R

We, you and your gran might know Mango for its colourful and customisable urban runarounds, but the Point R marks the build-your-own-bike brand's ascent into the world of more performance-orientated, race-ready steeds. Distance-friendly geometry meets a carbon-fibre fork meets a choice of Shimano gearing. What's remarkable, though, is that Mango has kept the prices low, whether you go for the Claris-g geared entry bike or the £620 top-of-the-range model running Shimano's racy 105 groupset. There are more Point bikes on the way, too, including a terribly fashionable gravel racer.

from £430 / [mangobikes.co.uk](http://mangobikes.co.uk)



## FUTURE STUFF SNITCHWATCHES

Fraser Macdonald is going to have to hide his habit

**A report released this month by the Institute of Engineering and Technology stated that there was a critical need to allow 999-type emergencies to be logged using something other than voice calls.** It said that texting or apps would be well within the abilities of any smartphone, and added that the location-aware nature of such devices could only help emergency services.

Meanwhile, from April 2018 all new cars in the UK will be required by an EU ruling to have an eCall system that will automatically alert

emergency services in the event of a crash. This 'black box' will share the location of the stricken vehicle, as well as the number of passengers on board.

Furthermore, the mighty Qualcomm is hard at work developing '2net': a wireless healthcare network that will answer the 'how' questions thrown up by the likes of Apple HealthKit, saying it will report your vital stats to your GP.

What am I leading to? Two things. One, that it won't be long before we have a

personal or automotive or architectural infrastructure that will watch over us and instantly report any kind of traumatic event to the relevant specialists. This will increase response speed and save lives. Yay.

But, two, how long before we have devices that will – through government ruling – report us to our GP if they detect that we are imbibing any kind of forbidden nectar? If my cholesterol is too high, will my smartwatch shop me to the doc for eating an entire Terry's Chocolate Orange?





# The only place to watch the UEFA Champions League live

It's no longer shown on ITV or Sky Sports



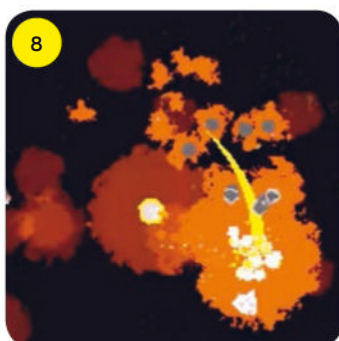
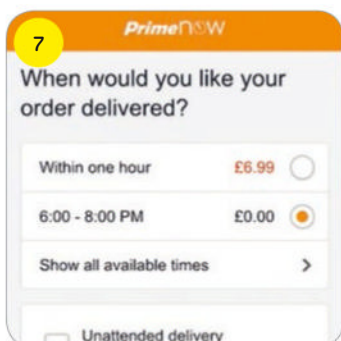
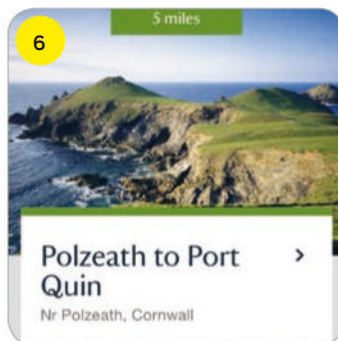
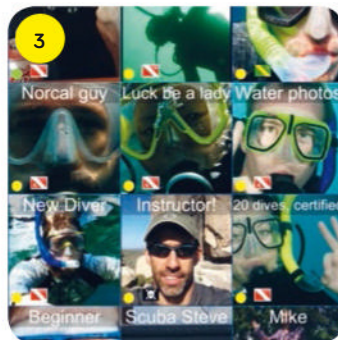
Visit [bt.com/europe](http://bt.com/europe)  
or call 0800 587 2000

12 UEFA Champions League games shown free to air on BT Sport Showcase 2015/16.



# ↓ APPS

## This month's mobile must-downloads



### 1 Dirt School Coaching £5 / iOS

Watch video of a pro cyclist riding up a rock. Ride up a rock. Upload video to app of yourself riding up a rock. Compare. Ride up a rock again. Despair. Pay Dirt School £35 for written feedback of your video.

### 2 Navmii

£free / iOS, Android, Windows

Previously known as Navfree, Navmii is a free sat-nav app, using free Open Street Map data. It incorporates the What3Words addressing system discussed on p29 and will also rate your driving.

### 3 DIVR

£free / iOS, Android

Unless you're James Bond, scuba diving works on a buddy system whereby you both look after each other. What if you can't find a buddy? Go snorkelling. Or use this divers' social network app.

### 4 Magic Duels

£free / iOS

If you thought *Magic: The Gathering* card games were already on iPhone, no. But now they can be, with the release of *Magic Duels*. Blizzard's *Heroes Of Warcraft* is the big rival, so it will have to be awesome.

### 5 Fallout Shelter

£free / iOS

*Fallout 4* is a long way away, so this iOS game from Bethesda has a lot of anticipation to help us deal with. It's a tower management sim, except that the tower is underground and is a shelter.

### 6 National Trust

£free / iOS, Android, Windows

There are two types of people who pay for NT membership. One loves the heritage, country and seaside sites. The other loves the free parking. This app offers nicely presented information for both.

### 7 Amazon Prime Now

£free / iOS, Android

If you've got a Prime subscription, and you need loo roll delivered in the next hour, and you're in central London, and you're prepared to pay the £7 delivery charge, then... hey, was that the doorbell?

### 8 FireWhip

£0.79 / iOS; £0.78 / Android

Having grown up on *Indiana Jones* films and *Castlevania* games, we're preconditioned to pay for anything with a whip in it. Sometimes, as with this fiery score-builder, that's a great idea. Sometimes it's not.

### 9 Antix

£free / iOS, Android

This controller app for GoPros adds the special skills of other cameras: the auto-editing of the TomTom Bandit and the watch-control (Apple Watch only) of EE's 4GEE cam. See our toughcam test, p65.

## ON THE HORIZON

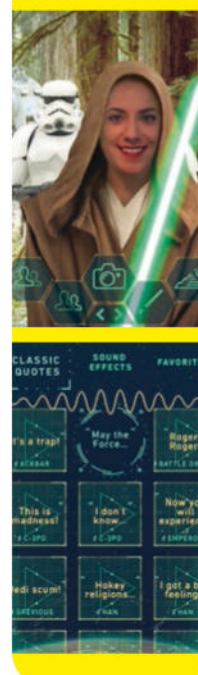
### STAR WARS

£free  
iOS, Android

And by 'On The Horizon', we mean spatially, as Disney is keeping its new *Star Wars* app in the US for now.

But were it here, or were you there, you'd be enjoying the ability to upload selfies into Star Warsian scenarios, and to have your local weather translated onto well-known galactic locales.

There's a library of all-encompassing character GIFs and sound clips. And, of course, there's the promise of having the very latest news about the new film, due to air in the UK in December.





# HIGH DEFINITION EVERYWHERE

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Go discover: [Sennheiser.com/HD630VB](http://Sennheiser.com/HD630VB)



# YAMAHA REFACE

£350 / [yamahasynth.com](http://yamahasynth.com)

## Musicians have all the fun.

Don't they? All those buttons to press and knobs to twiddle and pedals to jump on. Musicians and pilots. See, this is what car manufacturers need to figure out: it might seem very clever to centralise all a car's functions under a big touchscreen interface, but we like physical controls. It makes us feel like an astronaut preparing for launch, instead of a desk jockey popping out for lunch.

## Mmm, lunch...

Stay on target, Gold Leader. This is important: Yamaha has finally jumped on board with the retro synthesizer boom. The fingers of everyone from bedroom boppers to pro musicians have been twitching in anticipation. There are four Refaces, each with a three-octave mini keyboard and each with a look and sound that references heritage Yamaha kit from the '60s, '70s and '80s.

## Kajagoogoo?

Bless you. From the top down: the CP is based on '70s stage pianos, while the CS uses 'virtual analogue' circuitry to recreate sounds reminiscent of Peter Gabriel and Vangelis. Yamaha's famous DX7 is the subject of the Reface DX with its '80s-style design. Lastly, and most gloriously in our opinion, is the YC: '60s transistor organ fun for Pink Floyd snogging.

## Sounds like a lot of fun... for one.

Wait a few seconds 'til the clock strikes... 'wrong!' All Refaces have built-in speakers and can be battery-powered – we're promised five hours' use from six AAs – so you and your crew can take it to the street. What's more, there's web-based voice-sharing via USB using the Soundmondo network, as well as 3.5mm aux inputs. That's a lot of larks for not a lot of notes.



THE CS RANGE  
WAS MADE  
FAMOUS BY  
BRIAN ENO  
AND STEVIE  
WONDER





### Fixed lens footsoldier

## CANON POWERSHOT G3X

The compact camera is dead! Or so they say, because happy snappers are using phones, amateurs are using lens-swappy system cameras and pros are still using DSLRs. If anything can claw compacts away from the whistling edge of death's scythe, they say, it's the 1.0-type sensor. (It's called that because it's nearly an inch across so some people call it a '1in sensor, but other [more pedantic] people prefer '1.0-type'.) Either way, it's bigger than a normal compact's sensor and so is capable of taking much better photos. This new Canon is equipped with just such a sensor and a handy 24–600mm zoom lens to take advantage of it. It's got a serious face (and price tag), but that's because it has a whole camera market to save. Although Sony wants to help...

£800 / [canon.co.uk](http://canon.co.uk)

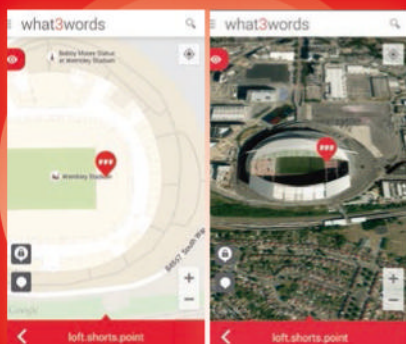


### Superzoom special forces

## SONY RX10 II

"Trumpety-parp!" is the battle-horn sound of Sony rallying to the cause of compact cameras. A tinkle in the background is the pedant's xylophone indicating that Sony also uses the not-quite-an-inch '1.0-type' sensor, while curses from the infantry indicate that they've just seen the price. "How can that possibly be justified?" is the pre-watershed gist, referring to how £1200 gets you a lot of system camera or a pretty decent DSLR. The answer is the sensor again: a new 1.0-type stacked Exmor RS CMOS chip. Fancy processing and DRAM memory give it such skills as super-slow-motion 1000fps video, or 14fps continuous shooting. Coupled with its 16x zoom f2.8 lens and 2.3MP electronic viewfinder, the RX10 II might be just the sort of champion this cause needs.

£1200 / [sony.co.uk](http://sony.co.uk)



## DROP EVERYTHING AND DOWNLOAD...

### What3Words

Efree / Android, iOS

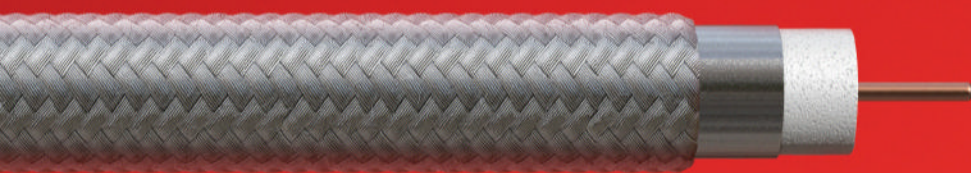
Whether you're trying to find a refuge halfway up Kilimanjaro or your seat at Wembley, the planet already has a fine geolocation system. Fine, that is, if you can remember numerical longitude and latitude coordinates. Which, after a meat pie and spilling half a pint of Doom Bar down your front, is going to be challenging. The What3Words system splits the entire planet into 3m squares and assigns

every one a three-word reference. So while Google Maps isn't helpful once you leave the car park, What3Words tells you the difference between one group of nine seats at Wembley (stamp.even.menu) or the next (loft.shorts.point). The more remote the spot, the more unlikely the words – but even a 3m-by-3m spot in the mid-Atlantic is the far from forgettable 'misaligned.droids.stretchy'.





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## Turn down the volume SAMSUNG GALAXY A8

Based on the inaccurate and unscientific idea that the *Stuff* office is a microcosm of the UK, we surmise that most people would probably choose a little extra girth on their phones in return for a bit of processing heavy lifting and battery stamina. There is, however, the part all of us that is amazed by something inordinately thin – the Samsung Galaxy A8 is just 5.9mm thick. Well, the camera lens splotches out a little bit. And inside there's a mid-range array of parts including a 1080p 5.6in screen, an octa-core Snapdragon processor and 2GB RAM. But on the whole, there's enough wonder at its size to overcome its technical limitations.

Lucky, then, that we have been saved from lengthy deliberation by Samsung currently only selling this wondrous wafer in China.

[Etba / samsung.com](#)



## There is a reason: turn, turn, turn TORO TIMECUTTER SW

Life involves a fair bit of turning around. Mowing necessitates a whole truckload of turning around, especially since you moved to a place that has enough lawn to require a ride-on mower. Some of these are designed like mini-tractors, while 'zero turn' types steer by independent drive of each rear wheel – fine and dandy, but the tank-style twin-lever control requires both hands all the time. Enter this Toro, where 'SW' stands for steering wheel, so you can drink a Diet Coke or wipe the sweat off your chest while manoeuvring around adoring onlookers. There are three models with increasing cutting width and 450cc or 700cc engines to suit. [from £3100 / toro.co.uk](#)

**WTF?** A mower that spins on a sixpence



## Now that's... ONE SMART PIANO

Like a sneaky French teacher who lets you watch French TV and then reveals, to your dismay, that you've actually been learning all along, *Rocksmith* taught us to play an actual guitar by disguising music lessons as a computer game. Now it's piano's turn. The One Smart Piano's LEDs show you which key to press, guided by an iPad-based songbook app. It features a mix of game-style challenges and straighter learning functions – either way, it's claimed you'll be playing basic songs two-handed within an hour. It's being crowdfunded along with a more basic keyboard version, but both are already in production. Next up, some kitchen knives that craftily teach you how to be a vet.

[from US\\$850 / smartpiano.com](#)





## TURNTABLES

Selecting a record player can be tricky when the fear of mangled vinyl sets in, but some are a little bit different...



NOT SO ANALOGUE

### Pro-Ject Essential II Digital

The Pro-Ject Essential is an established favourite among affordable turntables but this one adds an optical digital output, giving the option to squirt your tunes to your wireless speaker system or soundbar in 24-bit/96kHz format.

But this is vinyl we're talking about, the none-more-analogue format. Audio purists may take to the streets with flaming pitchforks at the very idea.

E310 / [henleydesigns.co.uk](http://henleydesigns.co.uk)



NOT SO EXPENSIVE

### Floating Record Vertical Turntable

There no shortage of striking sound spinners, but they tend to be both toe-curlingly expensive and delicate. The Floating Turntable, however, looks amazing and is designed to be beginner-friendly. It has its own cartridge – the bit with the needle, often an expensive addition – and as it also has speakers, you don't need a special phono amplifier.

US\$350 / [gramovox.com](http://gramovox.com)



NOT SO CONVENTIONAL

### TOC Vertical Record Player

You've been waiting for a vertical record player, then two appear at once. Your which-to-get angst is saved by the knowledge that this one is a concept but, of course, it is the slicker-looking of the two. Israeli designer Roy Harpaz's site describes its inner workings, including a Raspberry Pi controller, sliding cartridge and carbon-fibre brushes for keeping your records dust-free.

Etba (concept) / [royharpaz.com](http://royharpaz.com)





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# APPLE MUSIC WORTH DITCHING SPOTIFY FOR?



## ONE

### ITS PLAYLISTS DO HAVE A HUMAN TOUCH

At the middle of Apple's aluminium-framed iRobot, locked in the White Room, it seems there really is the beating heart of a human. We were pretty sceptical of Apple's claims that algorithmic playlists are a bit rubbish, and that real people would be at the core of Apple Music, but it turns out they may have a point. We've already spent a ludicrous amount of time delving into playlists based around things we like, and they're full of greatness.

## TWO

### BEATS 1 RADIO IS ACTUALLY QUITE GOOD

Unsurprisingly, Apple apes other services with radio stations based on artist or genre. But its ace card is Beats 1, a worldwide 24/7 station with actual living DJs. So far it seems pretty decent, offering a fairly diverse selection of tunes betwixt mainstream and indie. It also might turn some people on to radio, if they can stop complaining on Twitter that people are "stupidly talking all over the music". Just like they do on radio.

## THREE

### IT'S CLEVER AT MERGING YOUR MUSIC

Apple is a big fan of sucking you into its ecosystem. It rather cunningly did this with iTunes Match (which, like Google Play, mirrored your old ripped CDs in the cloud). Now, Apple Music happily merges what's in your iTunes app with what's on the iTunes Store. This works across Macs and iOS devices, and makes Spotify's desktop-only optional inclusion of local content look a little rudimentary.

## FOUR

### IT'S A SKINFLINT'S PARADISE

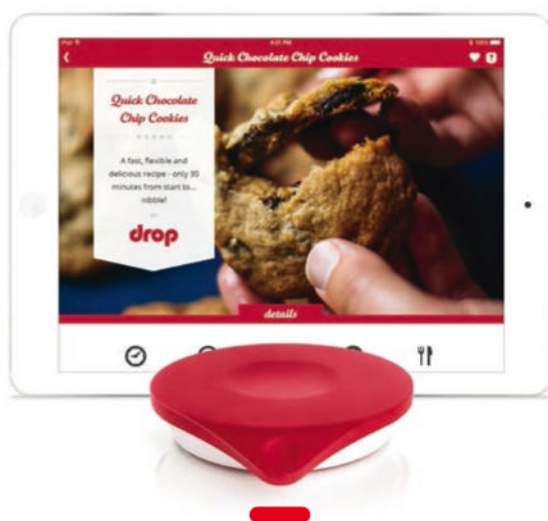
When you sign up, you get three months for free. Frankly, we reckon the 30 days you get with other services is pretty generous, but this is an entire summer of music, for nothing at all. And due to Taylor Swift suitably guilt-tripping Apple, artists will get paid and everything. So that's a win-win-win. If you are just cruising for free, don't forget to go into your account settings and disable the 'auto-renewal' switch.

## ...BUT

### IT NEEDS A BETTER BITRATE

Apple's Eddy Cue cryptically tweeted that the music's bitrate "depends on whether you are on Wi-Fi or cellular". On 3G, we've found it bounces between merrily munching through data and being unuseable. On Wi-Fi, we suspect you're getting streamed versions of what's on iTunes (256 kbps AAC — comparable with Spotify's highest quality). But there's no manual control, and no Tidal-style lossless option.



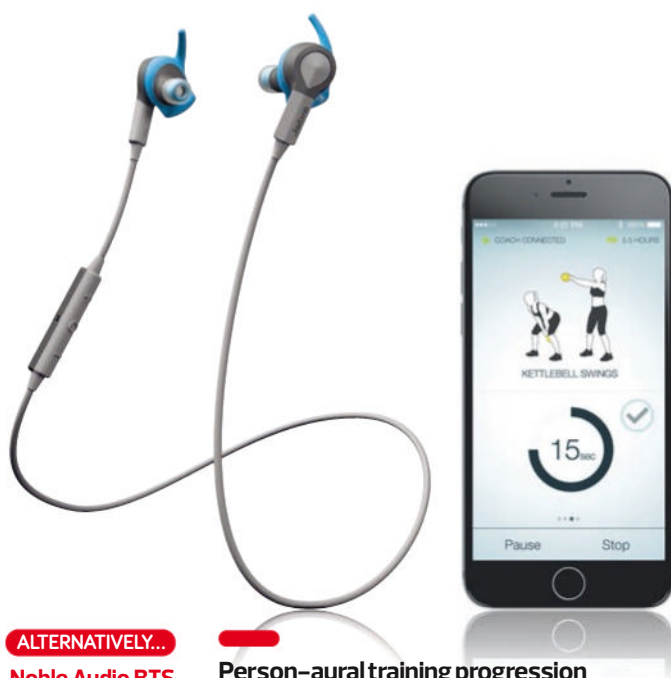


### Hey good-lookin', what app you got cookin'?

## DROP CONNECTED KITCHEN SCALE

Extend yourself from microwave meals and do your neglected oven some justice. This smart scale and companion app can provide you with recipes tailored for what you have in the cupboard, then help you weigh out the right ingredients, up to a 6kg maximum. Not enough flour? It'll resize the recipe to suit. The rubberised Drop scale uses Bluetooth, so the battery should last about a year – though the whole setup depends on whether the kids have run off with your iPad, as it has no display of its own.

£80 / [lakeland.co.uk](http://lakeland.co.uk)



### ALTERNATIVELY...

#### Noble Audio BTS

If it's just wirelessness you crave, this neat Bluetooth adaptor will make a pair of wired headphones free-roaming. Once you've zip-tie-tided the excess cable, that is.

£70 / [nobleaudio.com](http://nobleaudio.com)



### Person-aural training progression

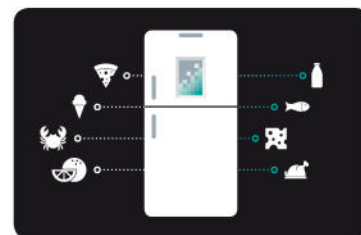
## JABRA SPORT COACH

The Jabra Sport Coach Bluetooth headphones are not dissimilar to last year's Jabra Sport Pulse versions. Which is to say that they are similar. But different. Cheaper, certainly: a whacking great £80 stays in your pocket, albeit at the expense of the Pulse's heart-rate monitoring. They both have app-driven voice-coaching, but the new Coach brings with it additional help in the form of a slew of new cross-fit-style activities, such as kettlebell swinging and burpees. "Twenty chin-ups, Chubby!" it might shout at you; but as it doesn't actually measure any movement except running, you can sneer back at it and eat a sneaky Snickers.

£120 / [jabra.co.uk](http://jabra.co.uk)

# DECIPHER

## ALLOW ME TO EXPLAIN...



## #5 LTE-M

Fraser Macdonald



**There's a frustration zone 10 metres from my front door.** It's where my desire to play music on my phone meets the point at which

it drops Wi-Fi in favour of mobile data. Which it would no doubt do seamlessly, if I weren't prodding a streaming request into its face until it locks up.

Who's the villain? Is it me? Is it my ageing phone? Or is it stupid, antiquated Wi-Fi? The answer is, of course, all three. But my ill feeling towards Wi-Fi increases later in my journey when I again lose streaming service because my phone is attempting to join The Cloud. Because I once did in another life, somewhere else.

Anyway, my issues are as nothing, for Wi-Fi is dead. Cancel your BT line rental with a cackle, for we'll soon be using solely 4G mobile broadband, known globally as LTE. GPRS, Edge and 3G will all be turned off and rerolled into making 4G faster and capable of handling all of us. If you want to know how, Google 'LTE

## THE MOBILE INDUSTRY IS DEVELOPING A NETWORK SPECIFICALLY FOR THE CHATTER OF MACHINES

Advanced', '3GPP' and/or 'Release 14', and we'll see you in a few weeks.

But it's not just about us – it's also the increasing hordes of devices that make up the Internet of Everything: machine-to-machine (M2M) communication such as your car telling your house that you're nearly home, and your fridge ordering more Babybels.

You'll be pleased to hear, then, that the mobile industry is already way down the road developing LTE-M: a low-power, low-bandwidth, low-cost network specifically for the chatter of machines. No longer will those wiry natterbugs interfere with your Spotify requests.



# BOTTLE OPENERS

Because vaping means no-one carries a plastic lighter any more

## 1 Machete Spatula

Lacking enough test bottles, we argued for some time about whether you could simultaneously dispatch three caps with this aggressively-styled burger flipper. [£12 / firebox.com](http://£12 / firebox.com)

## 2 Split Ring Bottle Opener

Not an opener for your keyring, it's an opener that is a keyring. Really want to blow your mind? Add Suck's key-shaped opener. [£5 / suck.uk.com](http://£5 / suck.uk.com)

## 3 Gerber Curve

Carabinieri: a double-hard Italian military policeman, who you don't want in your pocket. Carabiner: a useful clippy thing. This one also opens bottles – double-handly. [£15 / gerbergear.co.uk](http://£15 / gerbergear.co.uk)

## 4 Star Wars Millennium Falcon Multitool

"I'm givin' her all I got, Cap'n!" you cry, struggling to crack open your beer. Your co-drinkers, meanwhile, struggle with your sci-fi faux pas. [£10 / thefowndry.com](http://£10 / thefowndry.com)

## 5 Reef Fanning Flip-Flops

Some people never drink straight from a bottle, because germs. Flip-flops with an opener on their sole are not for these people. [£38 / surfdome.com](http://£38 / surfdome.com)

## 6 Volcom Ostrich Belt

Why did the ostrich cross the road? To get away from Volcom, which wanted to make it into a bottle-opening belt. Seems a sensible course of action to us. [£30 / volcom.co.uk](http://£30 / volcom.co.uk)







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# E-SCAPE

Leon Poultney experiences mud, sweat and gears at the UK's first all-electric off-road riding centre



**A rider comes screaming around a dusty left-hand bend. His foot grazes the ground as he leans the bike into an almost impossible position and, with a deft flick of the wrist, he loads up the throttle and sails over an enormous jump.**

But something is missing from this high-octane scene: the sound of highly tuned two-stroke engines and the smell of burning oil.

That's because E-Scape, where I've found myself for the day, is the first off-road riding course in the UK to use only battery-powered bikes, most notably the new Freeride E from KTM.

Riders from the age of six up to 60 are catered for at this Jurassic Park-like facility just off the M56 outside of Runcorn, Cheshire. I'm here to sample KTM's epic new electric off-roader, which packs the same performance as its 250cc petrol-powered siblings.

The bike has state-of-the-art lithium-ion battery technology and a permanent magnet synchronous motor that produces around 20bhp and 42Nm of torque. That's a lot when you consider it weighs just 106kg – around 10kg more than the fuel-burning version.

Paul Rutter, founder of E-Scape and my guide for the day, begins by

walking me through the controls. The throttle is operated like any normal bike, with a twisting motion of the wrist, but there's no need to worry about gears here.

"It makes it a lot simpler for those who may have never ridden a motorbike before," explains Paul. "Riders simply twist to go and the front and rear brake levers are located on the handlebars, leaving your legs and feet completely free to offer stability, which is essential in any off-road riding."

Once he's let me loose it takes me about 30 seconds to appreciate what Paul means, as the front wheel threatens to slide from beneath me during one particularly taxing corner and my trailing leg, which I've been told to extend during each turn, just about saves my bacon.

But it's not long before I'm ready to tackle the course, and even get some air on the jumps. The bike is enthralling to ride, offering loads of acceleration and an eerily quiet soundtrack that lets you tune in to the sound of the wind rushing past and your tyres clawing at the dirt.

Fancy a go? Customers pay just £15 for a half-hour training session and then they are let loose aboard a KTM Freeride E

on the main circuit, for £20 per 15-minute session.

For now Paul only has the one site in Cheshire, but he plans to roll out a small franchise of silent bike parks: "Because of the lack of emissions and noise pollution, it would be very simple for mountain bike trails or indoor go-karting courses to run these electric bikes."

## QUIET! THE E-BIKES ARE COMING



### KTM Freeride E-SM

The Supermoto version of the KTM Freeride E is a road-legal beast with near-silent motoring. It runs for an hour on a charge and takes as long to top up. [ktm.com](http://ktm.com)



### Zero SR

An established player in the zero-emissions game, the road-legal SR can reach 100mph, accelerate with supercar-baiting prowess and travel up to 151 miles on a charge. [zeromotorcycles.com](http://zeromotorcycles.com)



### Harley-Davidson Project LiveWire

Harley's electric hog does 0-60 in just 4 seconds and up to 130 miles on a charge. It's currently on tour to gauge public opinion with no release date. [projectlivewire.harley-davidson.com](http://projectlivewire.harley-davidson.com)

[ Find out more: [e-scape.org.uk](http://e-scape.org.uk) ]



### The moving goalposts of sound SOUNDMAGIC E50S, E80S

One pair of SoundMagic E10S earphones left the station costing £40 and getting five stars. Eleven months later, two pairs of earphones leave the same station, costing £50 and £70 respectively. At what star rating, to the nearest decimal point, will the two new models arrive at Manchester Piccadilly? This is a tricky one, because an increase in price rarely means a directly proportional increase in sound quality. Both E50S and E80S have a 10mm driver, and both have SoundMagic's clever Smart Switch, which allows the remote to work with most phones. The E80S looks slightly chunkier. Both come in tasteful gold, grey or red finishes. As for stars, we'll have to wait until we hear them.

£50, £70 / [ksdistribution.co.uk](http://ksdistribution.co.uk)



### Don't just see the light; like it RELIO

If we were to say to you 'USB light', you'd likely conjure up images of nasty little lamps bought in haste from outlet stores and symptomatic of a long stretch of poor life decisions. So we won't. That would be the wrong vibe altogether for this natty LED worklight. The 35mm cube creates a huge amount of light from any standard USB power source, but it's the quality of light that Relio has worked hard to achieve. Photographers, artists and geeks will love the choice of 3000k, 3500k or 4500k temperature models, with huge colour rendering values and high-FPS stability. It comes with a choice of 30° or 15° beam-spread lenses with a colour gel attachment, and as it has a standard tripod mount you can put it just about anywhere. Previously sold out of the creator's bedroom, Relio has just Kickstarted itself into full production.

£130 / [rel.io](http://rel.io)



## ? WTF IS THE MORGAN EV3?

### Did you steal that from Wallace and Gromit?

Nice try, but you'll find that the mishap-prone, cheese-loving inventor and his unfeasibly wise canine sidekick actually travelled around in a motorbike and sidecar. This is an electric three-wheeler, and unlike the plasticine people you just mentioned, it's very real.

### Really? What is it?

It's a futuristic version of the endearingly retro Morgan 3 Wheeler, but rather than power coming from a front-mounted S&S V-Twin motorcycle engine, it's now provided by an environmentally friendly electric motor and lithium-ion batteries. Pretty high-tech for a car that still has wood as one of its principal chassis components. A range of 150 miles and 0-60 acceleration times comparable to the petrol version (8.0secs) have been promised.

### It doesn't look very comfortable...

No, the petrol-powered 3 Wheeler is noisy, unforgiving and, thanks to a lack of roof and windscreen, extremely exposed to the elements. In fact, you have to be clinically insane to want to do any sort of distance in one. But hey, at least the EV3 will be nice and quiet. Apart from the wind. And the tyre noise, and the "Whazzats?" of people you pass.

### Isn't the hell-raising soundtrack and bonkers drive sort of the point?

It's true, the turret-gun-style exhausts that run along the flanks of the standard 3 Wheeler produce a fantastic note and never fail to have heads swivelling when it cruises through a sleepy village. However, EVs are quiet; that's the price you pay for planet-saving motoring.

### Still, though. I'll have a go.

Good on you! The EV3's still at prototype stage, but we might see it on the road come summer 2016. You bring your chequebook, we'll bring the picnic.





# YOUR MONTH **AUG**

Summer isn't all about sun – get your eyes, thumbs and brain around this lot



**09**

## DIVING CHESS WORLD CHAMPS

Third Space, London  
As soon as your opponent surfaces, you dive and have the length of your lungs to make your counter-move. What do you mean, "Why?" Because normal chess is so long-winded, isn't it? And because we Brits know a thing or two about putting on a weird event.



**10**

## ROBOT OVERLORDS

Blu-ray  
Low budget? Oh yes. British director? Present. Robots? Ready. Gillian Anderson on a horse? Bonus. Ben Kingsley? Naturally. Mediocre reviews? No problem. Saturday night LOLs with beer and chips? Sign us up.



**12**

## PIXELS

Aliens attack Earth using characters such as Pac-Man and Donkey Kong, having misinterpreted the message of peace in a 1982 NASA space capsule as a threat. Chris Columbus directs and Adam Sandler stars, having both misinterpreted this as a decent plot for a movie.



**13**

## AIRBOURNE

Eastbourne hosts four days of free airshow including a Eurofighter Typhoon and the Red Arrows, as well as a whole squadron of classic planes, bombers and helicopters. On the ground there will be live music, kids' stuff and Eastbourne's permanent ocean display to visit.



**18**

## VOLUME

Mike Bithell is the indie developer who created the rather good game *Thomas Was Alone*. Now working with a little more money (but not much) he's created another. Billed as a near-future retelling of Robin Hood, it stars Andy Serkis and a return role for Danny Wallace. Should be ace.



**23**

## MIND SPORTS OLYMPIAD

Cribbage, Sudoku and *Settlers Of Catan* are among the events in this brainfest, hosted by the crew behind the Diving Chess World Championship. There's even a multi-discipline Pentamind event; we couldn't even compute the formula used to work out the points for it.

WIN



# WIN ONE OF TWO TIBO URBAN 500 DJ STATIONS WORTH £700 EACH

"Everybody wants to be a DJ" – fiddlesticks. Your parents don't want to be DJs, do they? And we're pretty sure Vladimir Putin has no interest in the subject whatsoever. But how about you? Ah well, maybe, if you had the right kit...

The Tibo Urban 500 is an all-in-one multi-format DJ station, with a built-in DJ controller and 500W of pure power. It can play tracks from a wide range of formats as its connectivity options include Bluetooth, MIDI, USB and MP3 audio inputs. The two-channel mixer has three-band EQ and gain controls for seamless mixing, and you can operate the system with a laptop using the virtual DJ software included.

The two speakers and horn tweeter pump out crystal-clear sounds, and additional features include anti-shock jog wheels, laptop table, LCD backlit displays and 3.5mm jack sockets for a microphone and headphones. Hop along to [tibo-electronics.com](http://tibo-electronics.com) to find out more.

## HOW TO ENTER

For your chance to become a fully mobile tune-wrangler, just go to [stuff.tv/win](http://stuff.tv/win) and answer this question:

## WHERE MIGHT YOU USE THE TIBO URBAN 500?

- A** ... At a garden centre with your parents, looking for hardy perennials
- B** ... During tense diplomatic talks at the Kremlin
- C** ... At the best party ever

**HURRY!**  
COMPETITION  
CLOSES  
9 SEPTEMBER  
2015

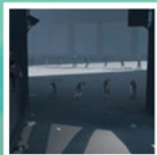
**Terms & conditions** 1 Open to UK residents aged 18 or over. 2 Entries close 11:59pm, 9 September 2015. 3 Prizes are as stated. 4 Prizes are non-transferable. 5 Only one entry per person. For full Haymarket terms & conditions see [www.stuff.tv/legal](http://www.stuff.tv/legal)  
Promoter: Haymarket Media Group, Teddington, Middx TW11 9BE



# TWELVE EXTRA LIVES

Explore a mutant-infested America, make your own Mario world and conquer an almost endless universe... you'll do all of this and more in the best 12 games of the next 12 months

## HOTLY ANTICIPATED INDIES



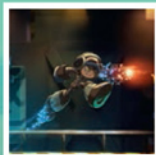
### Inside

This hails from the studio behind 2010's marvellous side-scroller *Limbo*, which is enough to get us interested. The mysterious teaser trailer oozes both style and a sense of dread. And what's inside that vat at the end? It should be a memorable journey.



### The Witness

*Braid* remains one of the gold standard indies of the past few years, and creator Jonathan Blow has since been crafting this miraculously beautiful first-person puzzler. *The Witness* finds you exploring a stunning island covered with puzzles, mazes, and audio bits for you to decipher.



### Mighty No. 9

It looks like *Mega Man*, plays like *Mega Man*, and comes from the creator of *Mega Man*, but *Mighty No. 9* isn't *Mega Man*—it's made by a different studio. Capcom has abandoned the Blue Bomber so his designer Kickstarted this spiritual successor, a reimagining of the formula.



PS4, Xbox One, PC // 2016

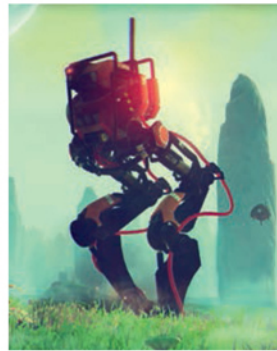
# No Man's Sky

**W**hen you stop and think about it, it can be difficult to comprehend the size of our universe. It's always bigger than that big thing you've just imagined. Yep, even that. So is indie cosmos-'em-up *No Man's Sky*. Its procedurally generated planets make *The Witcher 3*'s Northern Kingdoms look as cramped as a sumo match in a phonebox – before you even consider that each one exists within its own solar system, within its own galaxy.

You can go wherever you want, though sometimes you'll be restricted

by your equipment. Your ship or suit may need to be upgraded to visit toxic or radioactive planets, which you can do by collecting credits through mining materials, discovering new species or attacking and looting other ships and outposts.

What's the eventual aim? The makers won't say, but there will be a reason for you to aim for the centre of the universe. What you'll find there is anyone's guess. God? The meaning of life? Or an old man with a monolith at the end of his bed? It won't be long until you can find out...





PS4, Xbox One, PC // November

# Star Wars: Battlefront

**W**ith the first new Star Wars film since *Return Of The Jedi* due at the end of the year (*The Phantom Menace*? *Revenge Of The Sith*? Nope, never heard of them...) we were fully braced to be disappointed by the inevitable tie-in game – but *Battlefront* is shaping up to be anything but lazy cash-in.

For starters it embraces the Star Wars universe at the time of the original trilogy, rather than focusing on the

newest film (although a *Force Awakens* DLC pack will be available shortly after the film's released), so it immediately appeals to everyone who's ever had an imaginary lightsaber fight, whether they're five years old or 45.

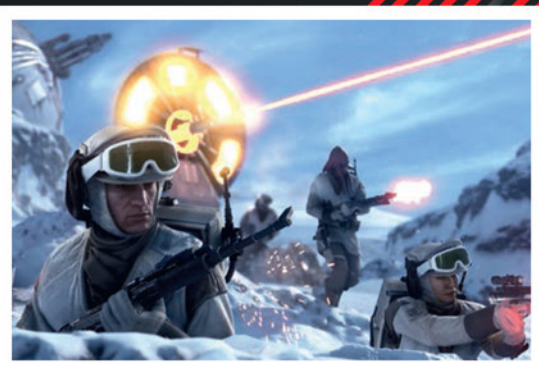
But what really hits you is how well Dice has recreated that world. The team had access to original props and materials from the films, plus they visited locations around the world that were used for filming, scanning

everything in 3D in order to create accurate models of them within the game – and that's a big part of what sucks you in as soon as you hear the first volley of blaster fire.

*Battlefront* will have a single-player mission, but the focus is very much on multiplayer, with 12 maps across four planets. We've had a bash at two of them (see below) – and *Battlefront* is already looking to be the definitive Star Wars videogame.



## ON THE DARK SIDE



**I**ad in the white armour of a stormtrooper, assuming it would offer some camouflage against the snowy backdrop of ice planet Hoth, we stepped into a 20-a-side battle, TIE Fighters screaming overhead and a giant AT-AT plodding by. The pew-pew of blaster fire rang out and we dropped dead. It doesn't get much more Star Wars than that.

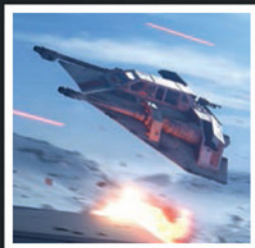
Having respawned, we pressed on, now using boulders and trenches for cover – and trying not to be distracted by the incredible graphics and those familiar characters. Even the most finicky Jedi fan will struggle not to be impressed.

Our job was to protect the AT-ATs while making

sure the scattered uplink stations were kept out of rebel hands. As in the *Battlefield* series, wins rely on teamwork rather than straight-up kills, and Dice (the same dev makes both titles) has nailed the sense of being just a single part of a much larger battle.

You can, if you're lucky, pick up power-ups that are dotted around the map. We managed to get behind the controls of an AT-ST Walker and kill off a few enemies with a barrage of rockets. But that firepower comes at a price. It was slow and tricky to manoeuvre, and left us rather exposed to attack.

Towards the end of the demo we experimented with switching between first- and third-person views. While the latter is good for keeping tabs on your surroundings, seeing through the eyes of a stormtrooper just felt more natural. Perhaps we do have designs on ruling the galaxy, just like that therapist told us all those years ago...



## ON THE LIGHT SIDE



**A**fter on in the same galaxy, but on a warmer Tatooine, we tried the two-player co-op Survival mode, playing as the Rebellion. It's essentially a horde-style game in which you fight off waves of increasingly strong AT stormtroopers.

We dispatched the first few quite easily, but when a tougher foe appeared – a stormtrooper with flashes of red on his armour – things began to heat up. Literally. Blasters don't use ammo clips so there's no faffing around with reloading in *Battlefront*. Instead, guns overheat with prolonged use, forcing you to wait a few seconds before being able to fire again; some last longer than others.

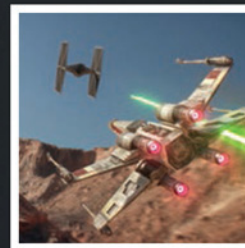
You're also equipped with a jetpack, which has enough charge to reach higher plains or simply to scarper from a gunfight that you might not be winning.

Before long, they sent an AT-ST our way. Of the two loadouts available we'd picked the one with a seeking rocket launcher, and a few direct hits later

our two-legged friend was a mass of mangled metal lying on the dusty floor.

You travel light; apart from a rechargeable shield that will protect you from damage for a while, that's pretty much the extent of your gear, but this isn't meant to be gun-obsessed war-porn like *Call Of Duty*. It's Star Wars.

Unlike the 40-person multiplayer, there are no unlimited respawns. You can grab extra lives when you find them, but if you run out it's up to your partner to fight off the enemies and complete the round before you can come back. If you both run out of lives, it's time to join Obi Wan in the big Cantina bar in the sky. Game over, young Padawan.







### Character assassination

Collect the right power-up in one of the battles and you'll respawn as one of Star Wars' most iconic characters. Luke, Vader and Boba (Fett) have all been announced as playable so far, but the one we're holding out for is Admiral Ackbar. No matter what button you press, all he'll ever do is bark: "It's a trap!"





PS4, Xbox One, PC / 2016

# Deus Ex: Mankind Divided

If it ain't broke, there's no need to augment it with enhanced vision, wall-smashing punches and a cloaking device – but despite *Deus Ex's* attitude towards self-improvement, *Mankind Divided* doesn't appear to stray too far from the formula that earned it *Stuff's* full five stars (even if the boss fights were a pain in the backside).

It's 2029, and protagonist Adam Jensen is back in the starring role. After

the conclusion of the last game, which saw the transhumans of the world sent into a violent rage, the natural humans of the world are widely against their semi-robotic counterparts, who've been shunned by the rest of society. Jensen is working with Interpol to track down transhuman terrorists, and he still wears shades at night. Perhaps he's in a band or something.

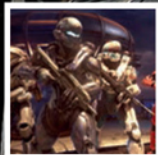
In the years since 2011's *Human Revolution* a number of extra

augmentations have been developed for Jensen to stash up his sleeve (or wherever else he can find space), including an arm-mounted gun and an obsidian defence screen called a Titan Shield.

The main *raison d'être* of *Deus Ex* has always been freedom of choice, so expect to see the effects of the way you choose to approach the game, whether that's silently sneaky, or all guns blazing.



## ALTERNATIVE SHOOTERS



### Halo 5

*Halo: The Master Chief Collection* will tide over series fans with HD updates, but this autumn is when the FPS sensation makes its new-gen leap. The multiplayer beta introduced major tweaks to the competitive formula, and *Halo 5's* 60fps engine ought to make for a serious Xbox One showcase.



### Call Of Duty: Black Ops III

There was a new *CoD* coming, and it was Treyarch's turn, so *Black Ops III* it is! Blops the Third will introduce four-player co-op for the campaign, plus you can play as a woman. Because now ladies are allowed to die needlessly for the powers that be as well. Yay equality!



### Tom Clancy's Rainbow Six Siege

*Siege* looks far more interesting than *Rainbow Six Patriots*. In two teams, the attackers try to rescue the hostage while the defenders try to stop them. Destructible environments allow you to turn floors into doors using C4 and drop in from above.

It was already 2029, but Jensen was still waiting for his kitchen extension to be completed



See the Great, Feel the Great

# LG G4



See the Great  
Feel the Great

*The Visibly Smart LG G4*

**Stuff**  
★★★★★

LG G4, Stufftv, May 2015

Combining style with substance, the hotly anticipated LG G4 delivers a truly breathtaking visual experience. Featuring a pro-quality 16MP camera with an F1.8 aperture lens and 8MP front-facing camera for 'super selfies', you'll be able to capture professional-looking pictures that 'pop' with detail and clarity. Combine this with the stunning IPS Quantum Quad HD Display, and the G4 will be your perfect smartphone companion to capture and enjoy the moments that matter to you.

**In-stores and online from the end of May 2015**

[www.lg.com/uk/G4](http://www.lg.com/uk/G4)



**LG**  
Life's Good

IPS  
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Display

**LASER** CAM F1.8

Qualcomm  
**snapdragon**

**android**



PS4, Xbox One / October

# Rock Band 4

**J**ust as *Guitar Hero* embarks on its own reunion tour, so too does Harmonix's *Rock Band*. Whereas its competitor has opted to reinvent itself with live video crowds and a two-layer button layout on its plastic axe, *Rock Band 4* seems (mostly) content with reliving the glory days and bringing the classic party experience to new consoles. Not that we're complaining.

If *Rock Band 3* seemed a little overstuffed with its keyboard controller and little-appreciated focus on musical instruction, *Rock Band 4* is all about stripped-down fun: it's guitar, bass, drums and vocals jamming in unison to a massive setlist of licensed tunes. Given the good few years since we enjoyed the last-gen entries – and spruced-up graphics aside – you could've convinced us that it was the exact same game.

But there is meaningful stuff to be found, mainly with the new freestyle

guitar solos. Rather than matching up exact notes coming down the chart, you can simply wail out whatever wild widdles pop to mind, and Harmonix says the game does its best to make you sound more Jimmy Page than Jimmy Cricket no matter the input. Multi-part vocal harmonies make their way over from *The Beatles: Rock Band*, so backing singers are a welcome (optional) addition.

That old-but-new approach extends to the hardware as well. The instrument



controllers look identical to the previous ones, but there are worthwhile tweaks: they're sturdier and more solid-feeling, plus the microphone is better at picking up your lyrical handiwork. But if you have the old instruments stored away, those will work fine – PS3 to PS4 and Xbox 360 to Xbox One, of course. (Harmonix pulled off a mighty feat, but they can't perform cross-platform miracles.)

Same goes for past music: almost all of the old downloadable songs and on-disc tracks will carry over into *Rock Band 4* across console generations, while the full new soundtrack includes bangers from Jack White, The Who, Fleetwood Mac and Queens Of The Stone Age, with plenty more yet to be revealed.

Reviving the old band could be a pricey proposition if you didn't hold onto your plastic guitars: the full bundle is £220. But as ever, *Rock Band 4* is an absolute blast, and it could be worth the investment to reignite your social (gaming) life.



## ALTERNATIVELY



### Guitar Hero Live due October

Activision has ditched cheesy animation in favour of live action but the big development is *GHLive*'s axe. It has two rows of buttons at the top of the neck, which will take some getting used to but could be that bit more satisfying to master.



Do your best David Bowie impression (minus the face paint and skin-tight leggings)





Is this what our post-nuclear world will look like? Best get stocked up on Super Noodles

PS4, Xbox One, PC / November

# Fallout 4



It's been 200 years since you entered Vault 111. Your wife and kid are nowhere to be seen, presumably killed in the nuclear war that led to your confinement, although on venturing outside and back home you discover that your helpful robotic nanny has survived and still recognises you – it'll even say your name (Bethesda has programmed in thousands).

There's also the faithful hound from the trailer – and while it can't say your name, it can be commanded to go to certain locations, collect stuff and attack enemies.

The famous VATS system also returns, allowing you to pause time, pick a specific body

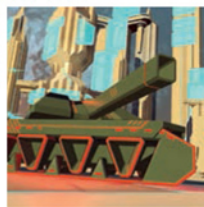
part on an enemy and take a shot at it. It's one of things that makes the series different, and that bit more tactical than other RPG-tinged shooters.

So far, so *Fallout* – but then things go a little bit *Minecraft*. Where *Fallout 3* allowed you to change the decor in your post-apocalyptic abode, in *Fallout 4* you'll be able to build a whole house. Or an entire settlement. Make it good enough and other people, including well-stocked traders, will move in.

All the post-apocalyptic detritus you gather can also now be reclaimed and used to customise your Power Armour and weapons, to the tune of thousands of variations for each one.



## WHAT'S NEXT IN VR



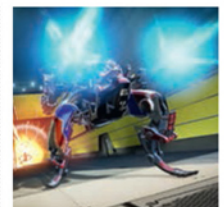
### Battlezone PS4

It might be a VR remake of the 1980 Atari classic, but don't expect to don a Morpheus headset and see the original green and black wireframe graphics. This reboot is in full technicolour, so your tank-based battles will have a *Tron*-esque feel. In fact, can we have a *Tron* game for Morpheus next please, Sony?



### Adr1ft PS4, Xbox One, PC

Essentially a twist on Oscar-winning film *Gravity*, *Adr1ft* sees you waking up alone on a wrecked space station. With limited oxygen and minimal resources, you must float through the wreckage and piece together what happened so you can find a way back home. It's coming to consoles, but we'll wait to play it on Oculus Rift.



### RIGS PS4

In this deathmatch two teams of three in Transformer-like mechs battle it out in a vast, multi-layered arena that gives the game a feeling of *Titanfall* crossed with *Unreal Tournament*. It's all part of an organised 'Mechanized Combat League' – and if this is what sport will be like in the future, then sign us up for a season ticket.



PS4, Xbox One, PC // February 2016

# Mirror's Edge: Catalyst

**W**ith its slick, first-person parkour gameplay, the original *Mirror's Edge* was a refreshing change of pace from run 'n' gun shooters – but it remained more a fleshed-out concept than a real, feature-packed world.

Seven years later and *Catalyst* is here to build on those foundations. It focuses on Faith, the protagonist whose red shoes we slipped into before, and takes place in the same unnervingly clean, dystopian city whose inhabitants are numbed by consumerism and ruled by fear.

Your first test of the controls is when Faith escapes from the futuristic law enforcement officers. It's simple on paper: tap the left bumper for any upward movements like jumping (or hold to run along walls), and use the left trigger for downward movements like sliding or rolling before landing.

In reality it took five minutes before we were chaining moves together fluidly, but

after falling to our death a few times, we found a satisfying rhythm, leaping over a fence, running along a wall and vaulting off an air duct before rolling to safety.

Whereas before you were limited to sectioned-off rooftops, in *Catalyst* the whole city is your playground. You can run over and through buildings, and even take to the streets. There are no loading screens, with seamless transitions designed to keep you moving at all times. That last part is important, as

Faith is essentially immune to damage for as long as she's in transit.

Combat itself is easy to master, needing only two buttons to open up a serious can of whoopass. From drop-kicking enemies in the face to delivering head-spinning moves, it's impossible not to smile as you out-gun the bad guys without pulling a single trigger.

You can put your fighting skills to the test in Security missions, which see you delivering information across the city while the law does its best to stamp you out. Or try Billboard Hack, which involves climbing over overhanging propaganda posters then destroying them to display your own tag.

But Dash mode is where the hardcore freerunners will spend most of their time, trying to shave vital milliseconds off their A-to-B times. Failing all that, you can run around exploring the vast playground at your disposal, creating your own death-defying entertainment as you go.



No guns allowed: use your environment, agility, momentum and distracting footwear



Wii U / September

# Super Mario Maker

**M**ushroom, turtle, another mushroom, flower, topped with a Bullet Bill. It might sound like the ingredients of Heston Blumenthal's latest creation, but it's actually an insane tower of enemies that Nintendo wants to let you build, fine-tune, and eventually challenge your friends with on *Super Mario Maker*.

And it's not just the enemies you can tinker with. Using a

simple set of level-building tools, players can construct their own 2D Mario worlds. The Wii U's touchscreen and stylus mean you can easily pick up and rejig items, and choose between the 8-bit or shiny HD graphical styles from opposite ends of Mario's long Nintendo career. You can also jump in and out of edit mode as you play, so if you encounter a bit that you've made too hard (or too easy)

you can immediately chuck in a few extra Goombas.

If you don't think your skills are quite up to scratch, there'll be 100 pre-made levels, plus you'll be able to download those made and shared by others.

If nothing else, you can finally answer those questions that have been keeping you awake for years. What happens when you stick a bomb on a Koopa and plonk it underwater?



PS4, Xbox One, PC / 2016

# Doom

**H**aving successfully resurrected *Wolfenstein* last summer, Bethesda is bringing back another daddy of '90s shooters.

Much like *The New Order*, the new *Doom* won't concern itself with the niceties of modern first-person shooters or hybrid RPGs. There'll be no waiting for a chance to take a clean shot, or stopping to take a breather while your health bar

fills back up to maximum – this is relentless, bullet-spraying chaos that rewards speed and maintaining momentum. Covering behind a wall is wasted time that could be better spent heaving a chainsaw into a demon's face.

This is a reboot rather than a remake, so some weapons and enemies from the original will return alongside new ones that will hopefully retain the same

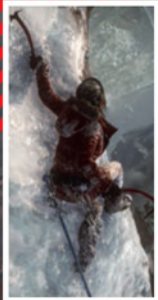
levels of subtlety as the BFG-9000. Just don't tell your mum what it stands for.

*Doom* looks charmingly brash, but that doesn't mean it'll be brainless. Its SnapMap mode is a leveled editor that'll allow you to make and share your own maps for the multiplayer mode, even opening up the game's rules of logic to create whole new modes. Think *Minecraft* reimaged by *Slayer*.





ALTERNATIVELY



**Rise Of The Tomb Raider**  
Xbox One,  
Xbox 360

Prefer your adventurers to come without a Y chromosome? Lara Croft also returns soon (November, in fact) in a snow-covered search for a lost city in Siberia. Xbox One owners will get it first, so they can lord it up over smug *Uncharted* fans, at least for a while.

PS4, Xbox One, PC / March 2016

# Uncharted 4: A Thief's End

With Lara Croft back on the scene, Nate Drake can't afford to sit around watching Dion Dublin in *Homes Under The Hammer*, reminiscing with Sully about the good old days – and with the power of the PS4 to exploit, Naughty Dog's first next-gen *Uncharted* game is shaping up to be a spectacular finale to the series.

The return of Drake's older brother Sam, long presumed

dead, brings our hero out of retirement; and while over the course of the game the intrepid adventurers are sure to take in any number of globe-spanning locations in pursuit of the pirate treasure they seek, what Naughty Dog has shown so far takes place in spectacular tropical locations, the most recent including a dramatic car chase through a Madagascan hillside town. This will be the first



time Drake has driven a car (perhaps he struggled with three-point turns), or indeed used a grappling hook to deliver swinging attacks, like a monkey with an attitude problem.

So will it really be the end for Drake? If Naughty Dog kills him off at the end, it would take some sort of misguided flashback or reincarnation game to carry on... but can you honestly see Sony letting him go that easily?



PS4, Xbox One // October

# Assassin's Creed Syndicate

**I**t begins in a very familiar place: a London pub. No, it's not *Stuff*'s Monday morning meeting, it's *Assassin's Creed Syndicate* – the first AC game to be set in Britain. Unfortunately there's no time for a pint – we're quickly out into the streets of Victorian London, nearby factories pumping black smoke into the sky, the roads busy with horse-drawn carriages.

It's 1868 and we've slipped into the long black coat and top hat of Jacob Frye – a kind of action hero Russell Brand. His sister Evie is also playable but for now we're scaling the walls as Jacob in that familiar AC way, the added power of the PS4 meaning you can really pick out the handholds in the intricate architecture. The Industrial Revolution is in full swing, and with the capital growing rapidly the wooden scaffolds make the rooftops even more accessible.

Jacob also has another trick: a rope launcher. Our mission is to reach a rival

gang's stronghold and eliminate them. We fire a rope up to a nearby rooftop and disappear into the air like some sort of Dickensian Batman.

AC vets will be familiar with what happens next. Having stalked across the skyline, using the zip-wire to bridge the bigger gaps and spotting landmarks from St Paul's to Blackfriars station, we use Eagle Vision to survey the area. Members of the hilariously named Blighters gang glow red. There are



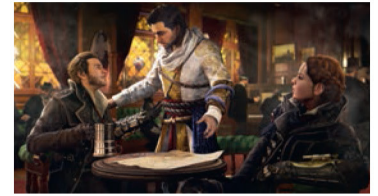
10 of them, with hostages who will be killed if we're detected. We fire a hallucinogenic dart into a fire that a trio of Blighters have gathered around for warmth, sending a cloud of noxious gas into the air, causing them to turn on each other. While two fight it out, a blade to the neck takes care of the third.

Having switched the top hat for a hood to signify added stealth, we clear the remaining seven with varying levels of sneakiness, resorting to a pistol for the final one and securing the area as a safe place on the map.

But before we have a chance to move on, the gang's leader Bloody Nora (yes, really) arrives and a chase ensues, hijacking a horse and carriage to race through the busy London streets. It ends with a mass brawl, from which we emerge victorious (natch), and sister Evie joins Jacob to declare to all within earshot that they are now part of the pair's workforce. Will there be a pension plan included?



"Cor blimey, Guv'na! You've gawn and got claret all over me best stabbin' jacket!"





Xbox One / September

# Forza Motorsport 6

**F**orza Motorsport 5 might have been the shimmering jewel of the Xbox One launch line-up, but for all its graphical bluster, the racer felt a bit dry and borrowed a little too heavily from earlier games. Those are forgivable complaints for the first new-gen entry, but not the next. Luckily, Turn 10 Studios' latest effort should right any wrongs.

No doubt, *Forza 6* delivers strength in numbers — starting with the 450+ cars, which is double the last count, plus they're all fully viewable in the stunning Forzavista mode. Want to walk around your virtual ride or examine the stitching on the leather steering wheel? Feel free. The new Ford GT leads the line-up, but the array of licensed manufacturers is huge.

*Forza 6* also bumps up the track count to 26, a serious upgrade over the 14 seen in *Forza 5*, which got old too soon due to limited locations. Daytona International Speedway and Brands Hatch are

standouts, but the real attention-grabber is Rio de Janeiro with its tight, winding city streets and eye-catching sights. It really shows off *Forza 6*'s graphical upgrades, which is impressive given how stunning the last game was.

But it's not all about graphical pop. We had a go at two of the big additions being worked into *Forza 6*: inclement weather and night racing. Thanks to fully rendered puddles — yes, 3D puddles, the future is truly great — you'll lose some control by

blasting through the wet stuff. It felt overly punishing, but we'll take Turn 10's word on the level of realism.

Racing at night adds a thoroughly tense element to the action, making defensive driving even more essential as headlights provide most of the illumination, particularly in the terrifying tree-lined back section of Le Mans.

*Forza*'s impressive driving model is well established across its decade-long career, so aside from those additions, don't expect too many surprises — there are no bonnet-mounted bazookas or ejector seats. But that's no problem: the core racing is impeccably refined and entertaining, and most of the complaints from the last game had to do with simply wanting more. *Forza 6* seems poised to address those gripes with its beefier garage and track line-up, plus a potentially vast new Stories Of Motorsport career. Tried and true isn't a problem when the racing is this fantastic.



Night-time driving and British-style weather have been included to add an extra layer of challenge

The Ford GT is just one option in a stable of over 450 cars (please don't drool on the bonnet)





This fella is called Trico; we asked, but *Pets At Home* were all out of them

PS4, Xbox One, PC // 2016

# The Last Guardian

Way back in 2009, Sony showed off a game called *The Last Guardian*. It'd already been in development for two years and at that time we were still firmly in PS3 territory – the PS4 was four years from even being announced. And then... nothing. The small boy and his dog-eagle-cat-thing disappeared and developers TeamIco fell silent.

But *The Last Guardian* is finally back. The little boy is still unnamed, but we now know that the dog-eagle-cat-thing is called Trico. Where his emerald green horns came from – and where removed them – is anyone's guess, as is much of the overall storyline. We have, however, seen a sequence not shown

to the public that involved the pair escaping from a cell-like room within the ruined city that holds them captive.

The makers explained that their aim is to blend the companionship of Ico with the giant creatures of *Shadow Of The Colossus*. The original hand-painted style remains, and that's vital in recreating the wonderful ethereal quality that made those earlier games so easy to get lost in; plus it retains the sense of height that makes those leaps across chasms such heart-in-mouth moments.

It might have been nearly ten years in the making, but *The Last Guardian* is shaping up to be worth the wait.

## WORKING BACKWARDS

*The Last Guardian* was meant for the PS3, but it's been so long in development its eventual home will be the PS4. So what if you've got other old-gen games you still want to play? Some are available on the PlayStation Store, but Microsoft has stolen a march on Sony and finally added backwards compatibility to the Xbox One – something that many gamers have clamoured for from the beginning.

Microsoft's list of compatible games is short – 21 so far – and the highlight is *Mass Effect* (above). Still,



the feature doesn't launch until autumn so there's time for it to expand.

However, after the success of remastered versions of last-gen games like *GTA V* and *The Last Of Us*, some developers might

rather tap into the extra cash available through sprucing up their old titles, rather than missing out by allowing Microsoft to simply make them compatible with the newer console. Only time (and take-up) will tell.





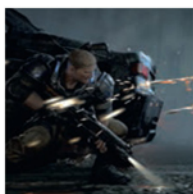
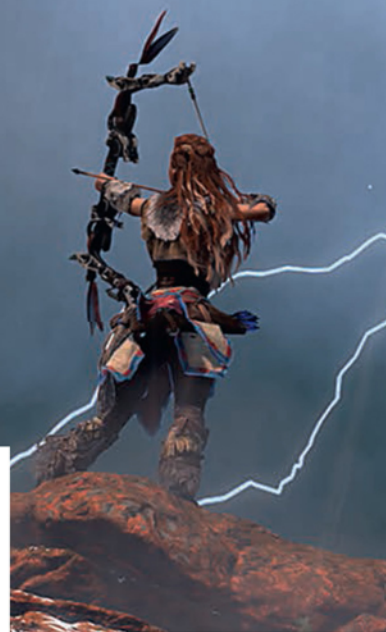
# AND BEYOND

PS4

## Horizon: Zero Dawn



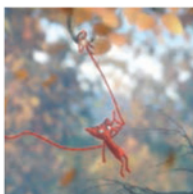
We've never been that enamoured with Guerrilla's overly linear *Killzone* games but *Horizon: Zero Dawn* looks to be another kettle of robot snakes. *Zero Dawn* features a huge open world inhabited by robotic animals, giving it the feel of a mechanised safari park. As it turns out it's actually Earth but nature (working with some rogue evolving technology) has reclaimed the cities, hence the organically high-tech feel; and if it plays as well as it looks this is a world we're keen to start exploring in more detail.



### Gears Of War 4

Xbox One

As the fifth *Gears Of War* game in the series, this one will be called *GOW4* (obviously). Marcus Fenix has gone, replaced by a chap called JD. He has a slightly less impossibly deep voice, but a similar penchant for moving lots of bullets very fast from inside his gun to the inside of anything that's trying to kill him.



### Unravel

PS4, Xbox One, PC

A side-scrolling platformer that's reminiscent of *Little Big Planet*, *Kirby* and a less nightmarish *Limbo*. The knitted protagonist, Yarny, unravels as he goes, so you have to make it to the end of each level using the wool to bridge gaps and lasso fish to pull you across water, without getting in a tangle and running out of yourself.



### Tom Clancy's Ghost Recon Wildlands

PS4, Xbox One, PC

With early plays of *The Division* not quite matching the initial excitement, *Wildlands* looks like a promising backup. Equally impressive free-roaming combined with a much grittier, contemporary setting seems like a solid recipe for success in this open-world shooter.



### For Honor

PS4, Xbox One, PC

It wasn't all games with a '4' in their name at E3. Ubisoft's *For Honor* allows you to play as a samurai, medieval knight or Viking and focuses on precise one-on-one combat. Rather than button-bashing you will need to position your blade and time your strikes properly, not just swing it around like you're trying to behead a wasp.



### South Park: The Fractured But Whole

PS4, Xbox One, PC

Say it out loud. Yep, this is a *South Park* game alright. Despite saying they'd never make another video game, Stone and Parker are onboard again, so expect Cartman, Kenny and co's superhero story to be as wildly inappropriate as the TV show. We wouldn't expect anything less.



### Mass Effect: Andromeda

PS4, Xbox One, PC

Despite having no number in the title, *Andromeda* is essentially *Mass Effect 4*. It takes place long after the original trilogy, although puzzlingly you won't be playing as the character in the announcement trailer. The biggest question: how does it get around the rather final ending of *Mass Effect 3*?



# oppo

## PM-3

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Planar Magnetic  
Headphones



Optimised for portability, PM-3 is the World's lightest closed-back planar magnetic design. It provides privacy and noise isolation and features high sensitivity and comfortable fit.

“Simply put, the Oppo PM-3 are my favourite closed-backed headphones currently available.”  
Sound & Vision

“...this is a superbly built, exceptionally comfortable and immensely talented headphone”  
AV Forums

“The Oppo PM-3 are some of the best portable headphones ever made.”  
Trusted Reviews

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## HA-2

Portable  
Headphone  
Amplifier  
& USB DAC



HA-2 is a compact headphone amplifier and USB DAC featuring ESS Sabre<sup>32</sup> Reference ES 9018-K2M DAC chip and support for 384 kHz/32-bit PCM and DSD up to 11.2MHz.

“A gem of a headphone amp/DAC at a very competitive price. Deserves to win plenty of friends.”  
Hi-Fi Choice

“...a crushingly competent piece of equipment for the asking price”  
AV Forums

PM-3 available in  
black or white





# App:roved

FOR  
TEXTY  
TITANS

## ● TypeDrawing

When touchscreens arrived, people derided the notion of virtual finger-painting because that was 'for children'. The fools! Being able to directly manipulate on-screen canvases with a digit changed creativity in exciting ways. In this app, your digital paintings comprise user-defined text strings, the characters sized by the speed of your strokes. An iOS classic now on Android, it's free, but IAP can remove the ads and get you more fonts.

**Stuff says** ★★★★★  
from £free / Android;  
£1.49 / iPhone; £2.29 / iPad

FOR  
THOUGHT  
CONTROL

## ● MindNode

No need to flip back to the cover to check if you accidentally picked up *Business Stuff Digest* — yes, we really are covering a mind-mapping app. But that's because MindNode is perfect for sorting your thoughts, no matter what kind of thinking you happen to be involved with. The branching diagrams are easy to create on Mac or iOS and can have images and 'hidden' notes applied; there's even an Apple Watch app for browsing recent documents in outline view.

**Stuff says** ★★★★★  
£7.99 / iOS; £14.99 / OS X

FOR  
ARCADE  
ANARCHY

## ● Geometry Wars 3: Dimensions

On the surface, this is the same *Robotron*-inspired twin-stick shooty action that arcade fans have loved since the dawn of the series. You zoom about, blowing away all manner of kamikaze shapes; but this entry isn't all about flat arenas — it now has a three-dimensional element. It looks fantastic, sounds great and has pitch-perfect controls. This is console-quality gaming on your phone that's simple to get into but a challenge to master.

**Stuff says** ★★★★★  
£3.82 / Android; £3.99 / iOS

FOR  
BUILDING  
A BOAT

## ● You Must Build A Boat

This is a ferocious and hugely entertaining mash-up of endless running and match-three, with a smattering of RPG levelling up. It involves sprinting through dungeons, your actions being driven by tile matches — keys unlock chests full of bling, and swords let you get all stabby. If you're forced off screen, you count your swag, upgrade your capabilities, recruit new crew members... and are another step closer to building that boat.

**Stuff says** ★★★★★  
£1.99 / Android; £2.29 / iOS





A close-up, high-contrast photograph of a man's face, looking down and slightly to the side. He is holding an Olympus OM-D E-M5 Mark II camera with a black lens. The camera is positioned in the lower right foreground, with the lens cap removed, revealing a green-tinted lens element. The man's face is partially in shadow, with light catching his eye and the side of his face. The background is a soft, out-of-focus grey.

# OLYMPUS

Your Vision. Our Future

## Olympus Cameras

# A new perspective.

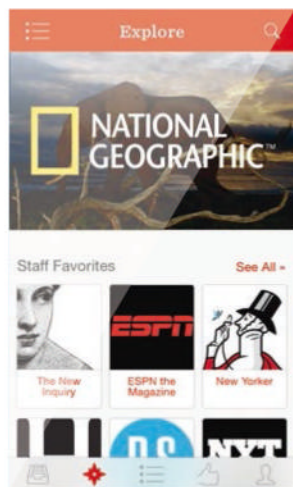
What has continued to motivate us over the years? Outstanding innovation that generates new perspectives and new possibilities.

The new OM-D E-M5 Mark II features the world's most powerful 5-axis image stabilisation system\*, producing breathtakingly sharp images even in low light and shake-free movies, all without the need for a tripod.

\*According to CIPA Standard 12/2014.

Discover more: [anewperspective.olympus.co.uk](http://anewperspective.olympus.co.uk)





### ● Longform

The idea here is to buck the trend of bite-sized online articles and get people reading news stories with depth. The app sometimes comes across like a worthy Twitter, but there's something great about it only listing articles of 2000 words or more; it's ideal for people who don't have a short attention... *SQUIRREL!* Sorry, attention span.

**Stuff says ★★★★★**  
Efree / iOS

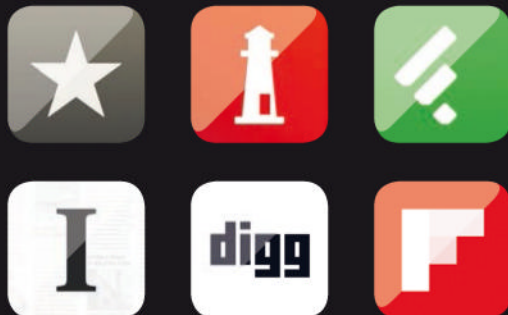


### ● Feedly

When Google set fire to Google Reader, Feedly heroically took over, providing a robust, free way to subscribe to website RSS feeds. The world might look on in scorn from their Twitters and their Facebooks, but you'll use this app and know you're not missing important news due to an inundation of lolcat GIFs.

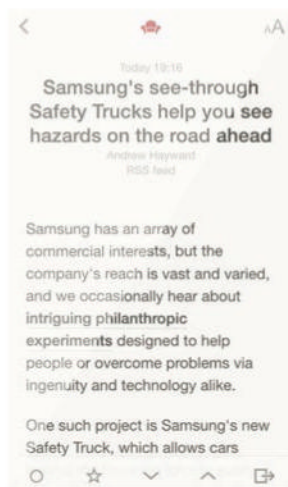
**Stuff says ★★★★★**  
Efree / Android, iOS

# Mini meme



# HAVE WE GOT NEWS FOR YOU...

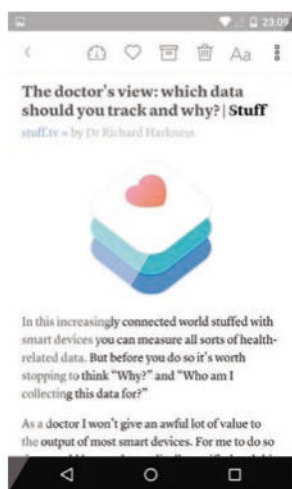
iOS fans don't need to wait for Apple's News, and Android won't be getting it anyway – so install these apps instead to stay in the know



### ● Reeder

For when Feedly isn't enough, there's Reeder – well, at least there is if you've got an iPhone. The app's a stylish and smart way to browse and read RSS feeds, and the built-in 'Readability' view strips articles to copy and images alone. Apple might bang on about animations and bling, but we just want the words, man.

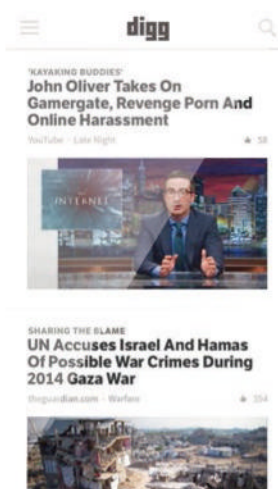
**Stuff says ★★★★★**  
£3.99 / iOS



### ● Instapaper

Uniquely for this round-up, Instapaper isn't designed to bring the news to you – you send the news to Instapaper, via a browser shortcut. It's essentially, then, a PVR for saved articles, also stripping out junk to leave pure text and images. Got nothing to send? The 'Browse' section has you covered.

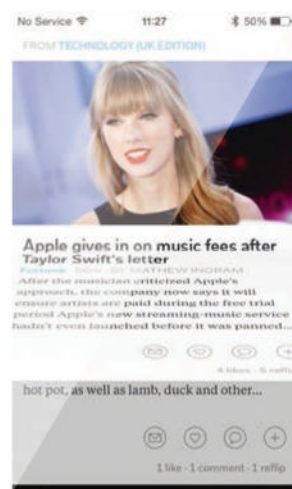
**Stuff says ★★★★★**  
Efree / Android, iOS



### ● Digg

Once the darling of the internet, social news site Digg fell on hard times and had to do the web equivalent of busking for pennies. Its current incarnation on mobile, dating from a 2012 relaunch, is very smart indeed. The app is simple but sleek, and the feeds feel as though they've been edited for you by actual humans.

**Stuff says ★★★★★**  
Efree / Android, iOS



### ● Flipboard

Apple News is clearly heavily inspired by Flipboard, so go for the original, which is also on Android. Follow people and topics! Compile and share custom mags! Get irritated by the gimmick that pretends scrolling doesn't exist! You can also browse Twitter timelines, which is weird but oddly good.

**Stuff says ★★★★★**  
Efree / Android, iOS, Windows Phone



GoPro®  
Be a **HERO**.

LAKEY PETERSON  
Photo by: Lakey Peterson



THIS IS YOUR LIFE. **BE A HERO.**



OVER **60** ACCESSORIES +  
APP & SOFTWARE





# A polished Pebble

Pebble's new smartwatch is the most successful Kickstarter project ever, promising more fun than an Apple Watch for a fraction of the cost

£180 / [getpebble.com](http://getpebble.com)

Hate the idea of charging your watch every day? Relax, there's none of that here. The Pebble Time lasts for a week, although four days is more likely if you make full use of it.

That's still a lot longer than the competition, and this is much more slender than the average Android Wear. It's not quite an Apple Watch beauty, but you can wait for the Time Steel if you want something more sophisticated.

Thanks to a slightly curved back and flexible strap, the Pebble is very comfy – and it is just terrifically easy to live with. A lot of that is down to the battery life, which is made possible by the low-energy colour screen. This is an LCD, but not as we know it: colours are slightly muted, there are only 64 shades, it's blocky and it isn't backlit.

It's less attention-grabbing than most smartwatch screens, and it's on 24/7. There's also a light that turns on when you flick your wrist, so you can see the screen at night. It's not flashy, but we like that – a lot.



## 1 Body

While most of the Pebble Time is plastic, the face is toughened glass surrounded by stainless steel. Steel is tough, but the PVD coating isn't. It looks good, but you need to be very careful to keep it in good nick. It is waterproof to 30m, though.

## 2 Screen

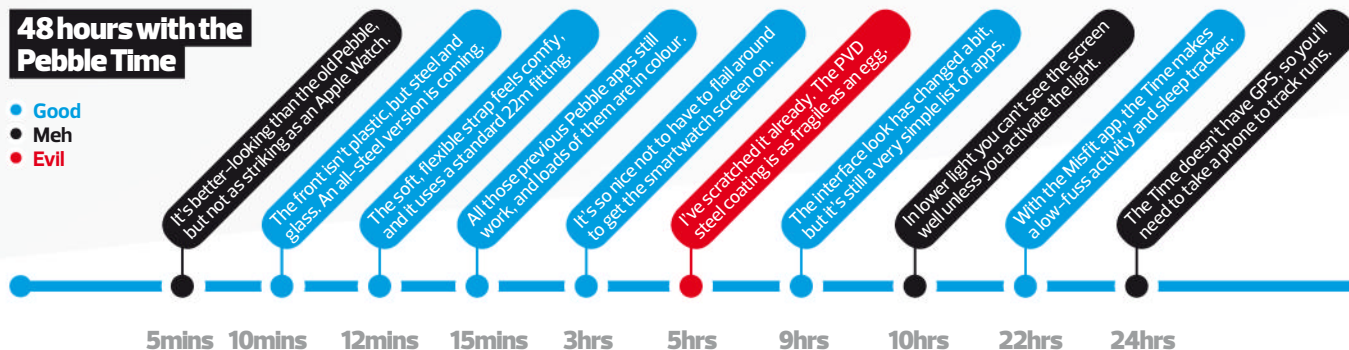
The 1.26in, 144x168 screen isn't high-end in the spec department, but it has a retro charm and the always-on, low-energy style is what makes the Pebble Time so nice to live with. It can only deal in 64 colours, though, compared to the 16.8 million of most screens.

## 3 Battery

On the back you'll find the power connector. It's a proprietary system but hooks in easily to the supplied cable with magnets, and can be plugged into any USB port for a juice-up. Pebble says you'll get up to a week off one charge; we got around four days.

## 48 hours with the Pebble Time

- Good
- Meh
- Evil





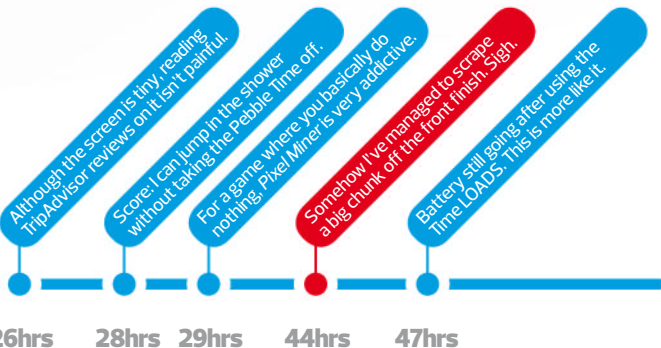


#### 4 Microphone

There's a little pinhole on the Pebble Time's right side. This is a microphone. The idea isn't to use the watch as a phone, thankfully, but to let you dictate notes and, well, who knows what when developers start adding support for it.

#### 5 Buttons

Rather than a touchscreen, the Pebble Time uses four buttons. The one on the left is a 'back' button while the other three are used to flick up and down menus and select items. You don't get the swooshy feel of an Apple Watch, but won't look silly using it either.



### Tech specs

**OS** Pebble OS **Screen** 1.26in 64-colour front-lit LCD with 144x168 resolution

**Processor** ARM Cortex-M4 100MHz

**Connectivity** Bluetooth, magnetic charge cable

**Dimensions** 41x38x9.5mm

**Weight** 42.5g

### Appy to meet you

The Apple Watch may have thousands of app developers on board, but Pebble have a few too...



#### ■ Misfit

Wearable maker Misfit has made an app that counts your steps and monitors your sleep, without you having to tell it you're off for a kip. It even gives you a buzz when you hit your activity target.



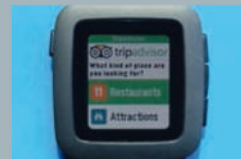
#### ■ Pixel Miner

Think just watching a miner slowly dig through the ground wouldn't be fun? Think again. This is probably Pebble's most addictive game. You save up to upgrade the miner's speed and equipment.



#### ■ Music

The inbuilt Music app lets you control songs on your phone, and even shows on screen what's playing. It's more useful than the standard controls you get with an inline headphone remote.



#### ■ TripAdvisor

By piggybacking off your phone's internet, TripAdvisor lets you find restaurants and attractions, read reviews and even find your way to places. Great for a quick browse.



The Pebble Time really 'gets' that smartwatches are used for things that take a second or two – living with it is so easy. If you want to start living through your wrist, get an Apple or Android Wear watch, but I'd be happier with one of these. It's just a shame the bezel is so easy to scratch – it'll look tatty before long. @wwwdotandrew

### STUFF SAYS ★★★★★

Pebble keeps it simple with another great watch that changes for your needs, not the other way around





BY APPOINTMENT TO  
HER MAJESTY THE QUEEN  
SUPPLIER OF CAR CARE PRODUCTS  
AUTOGLYM, LETCHWORTH, ENGLAND



BY APPOINTMENT TO  
HIS HIGHNESS THE PRINCE OF WALES  
SUPPLIER OF CAR CARE PRODUCTS  
AUTOGLYM, LETCHWORTH, ENGLAND

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- **GARMIN VIRB ELITE**
- **4GEE ACTION CAM**

# ADRENALINE SHOTS

We attached the top four action cameras to four whitewater experts and sent them into some challenging rapids

## How we tested

There's no point taking the world's toughest action cams on a family orienteering trip. So instead we subjected them to two rigorous tests.

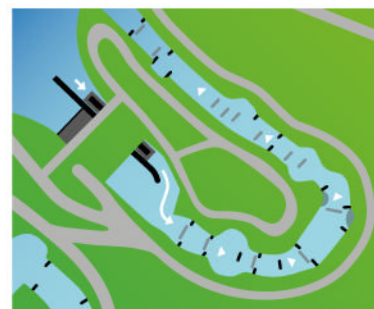
The first took place at Lee Valley White Water Centre (visitleevalley.org.uk), the course where Team GB struck canoeing gold in London 2012. Four of the

centre's most experienced kayakers each took a camera for several wild rides through the course's rapids, drops, holes and eddies. Go to [bit.ly/action-cams-test](http://bit.ly/action-cams-test) to compare the footage.

After their thorough dunking in the frothy stuff, we mounted the cams in a variety of positions from helmets to handlebars while out riding bikes. This helped

to test their capabilities in fast-moving situations and in changing light conditions. Each one was tested at 1080p at various frame rates, and at up to 4K where available.

After tucking our exhausted action cams into bed, we analysed their footage and editing software before crowning our champion...  
**Special thanks to Lee Valley White Water Centre, Herts**





## CANOE VIEW

### Ange Thompson

"I didn't notice the Bandit on my helmet at all – it had no effect on my paddling or rolling. It was super-easy to use thanks to the loud beep for starting and stopping recording, which I could easily hear over the roar of the water. The camera did get knocked slightly out of position at one point, but the automatic sleep mode meant battery life was surprisingly good."

1

2



## IN DETAIL

### 1 Bullet time

The Bandit's bullet shape makes it unobtrusive and less likely to get knocked off, while its rotating mechanism makes it perfect for mounting to the side of a helmet and maintaining a perfectly framed shot.

### 2 Pressing matters

It doesn't have a slide switch like the Garmin, but TomTom's star button on the back starts the filming and adds highlight tags, while the button just in front of the screen stops the recording.

### 3 Batt mobile

The Bandit features a Batt-stick, an ingenious design that makes charging batteries and swapping microSD cards easy. It slides out of the back and plugs directly into a USB port – no cable or card adaptor required.



# TOMTOM BANDIT

■ Price £300 / [tomtom.com](http://tomtom.com)

■ Tester Ange Thompson

TomToms are gradually disappearing from car dashboards thanks to powerful sat-nav apps, but we're starting to see more of them on helmets instead. The company's first action cam shows plenty of promise, with video resolution up to 4K, a host of sensors to extract the statistical goodness from your action-packed exploits, plus GPS and an interface inspired by its running watches.

## Bullet on your head

The Bandit's compact bulletcam form is a welcome change from the GoPro's boxiness, and its low-profile mounting system and size mean you can wear it on your head without looking like the human equivalent of a Google Street View car.

For kayaking duties we had to add the optional waterproof lens cover. This screws on in place of the standard white-edged cover and makes it waterproof to 50m as opposed to just splashproof. Unfortunately it also closely covers the mic, almost completely blocking the audio as a result.

## Noisy at night

The video quality is reasonable but it struggles in low light, with speckles of digital 'noise' appearing in the footage. Shooting at 4K is at 15 frames per second, which is fine for static shots but makes fast action look jerky. It manages a more useful 60fps at 1080p for capturing fast motion, or 30fps at 2.7K.

There are also timelapse and slow-mo modes available. You can film timelapses up to a resolution of 4K – resulting in a 30fps 4K video – but the quality of both is a little disappointing, showing a loss of detail and smearing in places.

## Stats entertainment

The onboard display will look highly familiar to users of TomTom's fitness watches. To check how your shot is framed, you'll need to switch on the Bandit's Wi-Fi to hook up to TomTom's Android or iOS app, which provides the most lag-free remote

viewfinder experience we've had from an action cam. It's also where you can get busy editing and sharing. It's possible to overlay video with GPS and sensor metrics on iOS, but not on Android.

The Bandit's neat quick-release mounting plates are a useful innovation. Pinching opposite sides together releases the sprung mounting clip quickly and easily, despite being reassuringly secure during use.

The basic kit comes with three mounts: one curved sticky helmet mount, one flat sticky mount and a mount for using with widely available GoPro hardware – a wise addition that recognises how important having a number of different mounting options is to getting good shots.

You can pair the Bandit with TomTom's Bluetooth heart-rate strap for more stats linked to your video, and also operate it via a small, simple button remote that can be worn on your wrist, rucksack strap or handlebars.

## Speedy sharing

The Bandit's headline feature is its focus on editing and sharing footage straight from your phone.

As with the GoPro, you can tag highlights manually – by hitting the record button while already recording – but the TomTom's built-in sensors will automatically tag your vids too. In the timeline of your clips you'll see different icons where you've hit your top speed, taken a tumble (g-force) or caught some air (vertical speed), as well as max acceleration and deceleration. It's really effective and immediately gives you a great starting point for your edit.

The 'shake to edit' feature serves up a string of short highlights, but you'll still want to spend some time removing clips from earlier sessions, picking data overlays and uploading to YouTube. It's not seamless, but it's the best option we've seen for getting your footage out into the world quickly.



## Tester specs

**Name** Ange Thompson  
**Kayak** Jackson Karma (Small)  
**Favourite kayaking spot** Fort William, Scotland  
**Fuel** Gummy bears  
**Watersports hero** Hannah Burgess



## Tech specs

**Resolution** 1080p at 60fps, 4K at 15fps, 16MP stills  
**Connectivity** Wi-Fi, Bluetooth  
**Water resistance** Splashproof, or waterproof to 50m with optional lens cover  
**Dimensions** 94x38x52mm, 190g

STUFF SAYS ★★★★★

Smart design and it's the king of quick edits, but video quality doesn't hit the high notes





## IN DETAIL

### 1 The button of power

The side button activates Wi-Fi when it's off, takes you to settings when the camera is on, and adds a 'HiLight tag' if pressed while filming. This sounds confusing, but you soon get the hang of it.

### 2 BacPacking

While cheaper cameras sacrifice higher-end features for a built-in touchscreen, you can plug an LCD Touch BacPac (£65) into the back of the Hero 4 Black, or add a Battery BacPac (£40) instead.

### 3 Keep it in-house

Most cameras require add-on waterproof cases, but the Hero 4 Black comes with its own 60m-waterproof housing. If you'd prefer, you can strip it back and use the 'The Frame' mount (£33).

# GOPRO HERO 4 BLACK



## Tester specs

**Name** Joey Allen  
**Kayak** Dagger  
Mamba 8.1  
**Favourite kayaking spot**  
Wales  
**Fuel** Mars bar,  
banana  
**Watersports hero**  
Arthur Gorton

■ Price £410 / [gopro.com](http://gopro.com)

■ Tester Joey Allen

"Hold on, that isn't the new super-dinky GoPro," you may be thinking. And you're right – we tested the Hero 4 Black rather than its new baby brother, the Hero 4 Session (see p14). The latter will be given a *Stuff* grilling soon, but this 4K-capable flagship is the one for this heavyweight test. It comes with the familiar polycarbonate waterproof housing and enough options to make it a bona fide professional filming device.

### Mount pleasant

Like most of the other action cams here, the GoPro comes with basic sticky mounts – one curved and one flat – plus a couple of short

pivot-arm sections to give a bit of adjustment. Because GoPro is so established, you'll be able to find mounts that fit on anything from your guitar to your dog. The TomTom and the 4GEE both come with GoPro-compatible mounts that take advantage of their competitor's ubiquity.

Unlike some of its cheaper variants, such as the Hero 4 Silver (£330), there's no touchscreen viewfinder on the Hero 4 Black; if you want to see what you're pointing at you'll have to use the app. Still, the small monochrome LCD on the front is useful. It shows main settings at a glance, and the system of three buttons – power/mode on the front,

record/enter on top and a Wi-Fi/settings button on the side – is surprisingly quick to use.

### Appy partner

Changing deeper settings requires you to use the app, though. It's a brilliant companion to the camera, and having all the settings on one page lets you check everything is just how you like it before you start shooting. This is especially useful when you start delving into the GoPro's wealth of options, including its new night mode, which allows longer exposures on photos as well as perfecting the setups for your latest timelapse. In the live view mode there's a bit



## CANOE VIEW

## Joey Allen

"The Hero 4's rejigged button layout, cleaner-looking housing and more secure locking system meant it was much more user-friendly than my current Hero 3. I used it with a Jackson Levator mount (£100, [squaresrock.co.uk](http://squaresrock.co.uk)). It's my favourite mount because of its static position, as opposed to head mounts, which shift around and often don't give as true an image."



## Tech specs

**Resolution** 4K at 30fps, 1080p at 120fps, 16MP stills  
**Connectivity** Wi-Fi  
**Water resistance** Waterproof to 50m  
**Dimensions** 41x59x30mm, 152g

more lag than the quick TomTom, but it's only two seconds or so.

The Hero 4 Black is comfortably the most expensive camera in this test, so you'd hope it would deliver the best image quality. Thankfully, it does: this is only camera on test that shoots proper 4K at 30fps, and it shows: the action is smooth and the GoPro's great dynamic range captures more detail in the shadows and highlights as well as delivering more natural colours.

While its rivals do basic timelapse videos, the GoPro has a potentially bamboozling number of options from video timelapses in 4K to video

and timelapse at the same time in 1080p. There's even night lapse mode, which adjusts shutter speed to allow it to capture impressive shots of the night sky, or lights from passing traffic snaking along dark roads. Yes, the GoPro is expensive, but it isn't a camera you'll get bored with quickly.

## Editing sweet

You can't do any editing in the GoPro app, so while out and about you can only share video clips. But its desktop editing software is powerful. The intuitive layout and step-by-step process help you get editing quickly,

while there are plenty of tools for changing the look and feel of your video.

You can apply different filters with presets, slow down footage, then get it out there for your friends to see. There are even editing templates with music based on a handful of popular GoPro videos so you can slot your own footage straight in. This software alone is responsible for the spread of GoPro-shot videos, and now third-party apps like Antix (£free / iOS, Android) are bringing auto-editing powers like those seen on the TomTom Bandit.

STUFF SAYS ★★★★★

A powerful action-film-making tool with great desktop editing software – it's still the one to beat



# GARMIN VIRB ELITE

■ Price £210 / [garmin.com](http://garmin.com)

■ Tester Sean Clarke

Garmin might be relatively new to action cams, but it has a wealth of tough outdoor experience in everything from sailing to cycling. Long, flat, and in a rubbery black and white casing, the Garmin Virb Elite's styling can be traced back to some of the firm's handheld GPS units.

## King of controls

The Virb Elite's display is a 1.4in 'chroma' screen that is designed specifically for use in bright light. It works well, using ambient light instead of a backlight, giving it good visibility outdoors and low power consumption. You won't want to watch whole movies on it, but for framing and information purposes it does an admirable job.

The Virb is the only camera here with a slider switch instead of a button to start recording. It's our favourite method of controlling an action cam; you know absolutely when it's recording or not, and you can use it to start recording from powered off – no holding buttons or accidentally double-pressing. Perfect for when it's helmet-mounted and you can't see what you're doing.

## Auto-recording smarts

As with its bike-computer cousins, the Virb's GPS can be set to start and stop when you do, so it doesn't use up all its memory (and battery) unnecessarily. If you're out on the mountain you can also set it to record when you start going downhill – again, great for cutting out the lift runs on your skiing or biking session.

The camera itself is a little ungainly, and it isn't helped by the rather bulky mounting system, which leaves it sitting high off its mounting point. It comes with a pair of sticky mounts – one curved and one flat. It was dunked a number of times during kayaking without its waterproof dive housing, so it is clearly more than splashproof.

## A video natural

This quality extends to the video itself – footage from the Virb Elite

has bags of detail and natural colours, coming second only to the GoPro in the quality of its footage.

Like the TomTom, the Virb Elite is a master of data collection. It uses its inbuilt GPS, accelerometers and gyroscope to measure g-force, distances and speed. It will display these as you move (only really useful when mounted on bike handlebars) and save them to overlay on your footage when editing.

You have the option of attaching ANT+ accessories to the Virb Elite to further add to your growing pile of data. So if you've already got a heart-rate belt, cadence sensor or power meter lying around, you can get those in on the act.

## Mind the app

We had a lot of trouble with the Android remote app. Whenever we tried to start recording from the app it didn't work, even causing the camera to freeze a couple of times. It's a far cry from the TomTom's stellar mobile effort. From the intro screens on the app, it appears that Garmin has focused its mobile support on its newer Virb XE camera, leaving the Virb and Virb Elite out in the cold somewhat.

## Statty professor

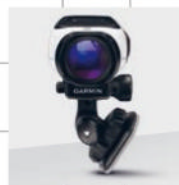
Garmin's free Virb Edit software is on hand to help you slot together your GPS-logged masterpiece. It makes good use of the camera's many sensors, allowing you to overlay your footage with G-Metrix – stats such as speed, acceleration, position and even g-force. Our favourite of these is one we've only seen on Formula 1 TV coverage, with a dot in a circle that shows lateral forces as you speed up, slow down and corner.

There is a wide range of G-Metrix layout choices, and you can even customise your own. As an editing package it's pretty basic, but its simplicity helps keep you focused. MP4 is the only export format option, so if you want to squash the file down a bit you'll have to use a secondary editing package.



## Tester specs

**Name** Sean Clarke  
**Kayak** 2013 Jackson Kayak Super Star  
**Favourite kayaking spot** The White Nile, Uganda  
**Fuel** Black coffee  
**Watersports hero** Rush Sturges



## Tech specs

**Resolution** 1080 at 30fps, 16MP stills  
**Connectivity** Wi-Fi, ANT+, GPS  
**Water resistance** Splashproof, or waterproof to 50m in optional dive case  
**Dimensions** 32x53x111mm, 177g

STUFF SAYS ★★★★★

There are a few niggles, but the picture's great and it's excellent value for money



## CANOE VIEW

## Sean Clarke

"The Virb is a little heavier than other action cams I've used and I was initially worried about its bulkiness, but once I was on the water I barely noticed it. I really liked the ease of the on/off switch — just a quick flick and it's recording — and it stayed securely in place the whole time, even with some hefty party wave action and arms flailing everywhere."



## IN DETAIL

## 1 Sun block

The Virb Elite's reflective Chroma LCD works with ambient light rather than using a backlight. This is a trick taken from Garmin's handheld GPS range; it produces clear text and previews even in blazing sunshine.

## 2 Under control

This main button is a simple way to eliminate any "Is it recording?" confusion. Slide one way to start recording, slide back again to stop. Best of all, if it's off, the slider switches it on and starts recording in one go.

## 3 Tracking a punch

The Virb Elite is packed with accelerometers, gyroscopes and a compass as well as GPS to track your every move. With Virb Edit software, you can lay these stats over your videos for the ultimate bragging rights.







## IN DETAIL

### 1 Watch yourself

While its onboard menu display is tiny, you can line up your shot with the live view on the accompanying watch. Its sporty styling matches the camera and it's pretty useful having a viewfinder on your wrist.

### 2 SIM city

Underneath the battery sits the nano SIM card, letting the 4GEE Action Cam beam your antics straight to admirers worldwide via the live broadcasting app, Skeegle. It only works with EE SIM cards.

### 3 Lost connection

The 4GEE comes with an adaptor for GoPro mounts. The connection wasn't the most confidence-inspiring, as the camera came loose on our first run, but it was fine after that.



# 4GEE ACTION CAM



## Tester specs

**Name** Rob Powell  
**Kayak** Jackson  
2014 Rockstar  
**Favourite**  
**kayaking spot**  
Hurley Weir,  
Berkshire  
**Fuel** Skinny latte  
**Watersports hero**  
Steve Fisher

■ **Price** £300 / [shop.ee.co.uk](http://shop.ee.co.uk)

■ **Tester** Rob Powell

Mobile networks aren't known for their love of extreme sports, but that hasn't stopped EE from making an action cam. Its headline feature (naturally) is a SIM card slot so you can livestream adventures over EE's 4G network.

It's the least refined-looking of the bunch — distinctly boxy and reminiscent of a much older, bulkier GoPro in its clear polycarbonate waterproof housing. Open up the back and you'll find a BenQ battery inside — EE's camera is essentially a rebranded BenQ QC1 4G Action Cam.

### Problems mounting up

The only controls are two buttons on top — a green one for power/menu

and a yellow one for recording/enter. There's also a microUSB port and a microSD slot.

The mounting system seems a bit half-baked — a feeling reinforced when our test unit disappeared from the kayaker's GoPro chest mount. In doing so it passed a tough old test, though: when we found it, it had survived being dragged through the mighty pumps that turn the Lee Valley White Water Centre's course into a raging torrent. Apart from a few drops of water inside and some light scuffs, it emerged unscathed.

### Short on detail

The 4GEE Action Camera's video quality certainly can't compete with

the GoPro, but it also falls behind the Garmin and TomTom (though the latter not by much). There's a distinct absence of detail, especially in the highs and lows, with heavy sharpening and oversaturated colours producing a very artificial feel to the footage. When compared to the lovely picture from the cheaper Garmin Virb Elite, you'll realise you're paying a hefty price for that SIM card slot.

To be completely honest, we're not sure when being able to livestream your action cam footage will actually be useful. Anyone who's ever watched back their best run down a snowy



## CANOE VIEW

## Rob Powell

"The 4GEE has a similar design to a GoPro but also comes with a waterproof watch for live-viewing what you're filming. I found both camera and watch easy to use. Unfortunately the camera came off my GoPro chest mount (which it was attached to with the bundled adaptor), but it continued to work despite taking its fair share of knocks."



## Tech specs

## Resolution

1080p at 30fps,  
13MP stills

## Connectivity

Wi-Fi, 4G

## Water resistance

Waterproof  
to 60m with  
bundled case

## Dimensions

59x43x51mm,  
128g

mountain or muddy trail will know that 90% of what you capture isn't worth keeping.

And while those whose exploits are a shade more radical than ours might want to broadcast in real time to their loyal fanbases, they'll only be able to do that if their loyal fanbases are using EE's proprietary Skeegle app: the open (and let's face it, much more popular) Meerkat and Periscope apps are sadly left out.

## Delaying tactics

In practice, setting up the camera to work with Skeegle was quite a hassle, as you have to jump around

between the 4GEE Action Camera app and Skeegle via a Facebook login. Once up and running, there was about a 12-second delay on the footage, and quality varied wildly depending upon signal strength. With a strong signal it was actually quite watchable, delivering up to 720p at 30fps, but sadly some of the most interesting places for filming aren't likely to have perfect 4G reception.

The other unusual feature of this setup is its companion watch. It's big, brash and rubbery and acts as a wrist-mounted remote and viewfinder for the camera. While

it's not exactly premium, it's fun, and being able to check your shot on your wrist and hit record is actually quite useful. Switch off live view if you want the battery to last, though – our watch ran out of juice before the camera did.

## Missing post

EE's Action Cam doesn't have any associated editing software, so you're on your own when it comes to slicing up your best vids. Our first stop would be GoPro's software, which is free and lets you edit MP4 files from any of these cameras on Mac or Windows.

STUFF SAYS ★★☆☆☆

Livestreaming over 4G makes it unique, but that will likely be an underused and costly feature



GOPRO HAS BEEN  
DOING THIS, AND  
ONLY THIS, FOR  
A LONG TIME...  
AND IT SHOWS

## THE WINNER

### ■ GOPRO HERO 4 BLACK



For footage from our shoot, get Stuff's iPad edition in the App Store

**It's exciting to see new competition in the action cameras arena.** The upstart contenders bring useful new tech: GPS and data overlays that make sense now, and livestreaming tech that could be a taste of video's future.

But GoPro has been doing this, and only this, for a long time... and it shows. The Hero 4 has a focus on image quality and versatility that mean it's still the one to beat. Its free editing software is just as powerful, helping you to get carefully crafted action vids up in double-quick time, and it comes with a ton of mounting options. Having said that, £410 is a lot to spend on a toughcam. The GoPro's cheaper cousin, the Hero 4

Silver (£330), shoots 4K at 15fps rather than 30fps, but does have a live view screen; and if you're not looking to shoot 4K, the Hero 4 Session is smaller and lighter.

The real bargain, however, is the Garmin Virb Elite, which at £210 allows you to create a two-camera shoot for (about) the price of one GoPro, without compromising on video quality and adding a nice editing package that includes some cool G-Metrix overlays. The nicely designed TomTom shares these abilities, and the 4GEE brings a new one: the ability to broadcast live to the world from one small camera. Which could be the future of video... but not yet. For now, GoPro remains the king.



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5 OF THE BEST

# High-end Bluetooth speakers

These days wireless frightboxes are cheap as crisps, but for premium sound you need premium kit. These five will start your party with a bang



BEST FOR...  
POCKET  
POWER

#### Suits, you sir

The jacket is very secure. You need to unscrew and remove the frame and then unclasp; the speaker block will slide out.

## Fugoo Sport £140 / fugoo.com

### Make some noise

This one's for those who like to keep their options open. The Fugoo range is made up of a core speaker block and three kinds of jacket, which you can swap around later.

For the fashion-conscious there's the simple Style jacket, which looks pretty and offers waterproofing. At the other end of the range is the Tough, armed to the teeth with hex screws

and aluminium, and probably classifiable as a weapon. What we have here is the Sport.

There are six speaker units on the core, facing sideways and upwards. Bluetooth is of the aptX flavour, and you can ask anything of Siri or Google Now with a simple click of a button.

### Boom or fizzle?

The Fugoo is the most portable of the lot, no bigger than a pencil

case. But you wouldn't think that from listening to it – it's not just the spread that impresses, but also the balance. No part of the frequency range is exaggerated, even when you turn it up (and boy, can you turn it up). There's even a good showing in the way of detail and dynamics.

That said, it does struggle against its larger rivals. The UE Megaboom punches harder and deeper, while the B&W T7

is miles ahead in refinement. It's lovely to use, though – not least because the battery lasts 40 hours. Buttons are responsive and pairing is seamless. Plus a nice man speaks to you, which is either helpful or annoying.

### TECH SPECS

**Dimensions** 59x187x73mm, 0.53kg  
**Battery life** 40 hours  
**USB** No **Waterproof** Yes

**STUFF SAYS** A flexible, portable design that really punches above its weight ★★★★★



**Black sheep?**

If the woolly cover gets damaged (or you just feel like a change) you can remove it and get a new one. There are 14 colours available.

**BEST FOR...**  
**STROKING**

## Libratone Zipp BT £300 / libratone.com

**Make some noise**

Do you ever look at your gadgets and wish they were fluffier? We do. That niche is fulfilled by Libratone, maker of woolly audio products. The Zipp BT sports a coat of fine Italian wool.

But Libratone also specialises in wireless connectivity, and the Zipp BT has lots to offer: AirPlay, DLNA, aptX Bluetooth, NFC, Spotify Connect and 'PlayDirect', with which the speaker generates its own Wi-Fi network.

Its size puts this at the upper limit of what we'd carry around. The woolly cover means it's impossible to scratch, but we don't think it would take too kindly to being dropped.

**Boom or fizzle?**

The Zipp BT's round design makes it naturally good at

dispersing sound. What you get is widespread and expressive. There's plenty of detail, while timing is sharp and dynamics fluid. The smoothness makes it easy on the ears, even with lower-quality files.

AirPlay and DLNA need a good network to function and the buttons aren't the most intuitive, though most of the time you'll be using the free control app, which is lovely. The EQ settings let you play with the sound based on the position of the speaker.

Battery life is the only disappointment here. Libratone claims eight hours of wired playing, or four hours of wireless.

**TECH SPECS****Dimensions**

260x122x122mm, 1.8kg

**Battery life** 4–8 hours

**USB** Yes **Waterproof** No

**STUFF SAYS** Like carrying a small singing sheep around, but even better ★★★★★

**Any port in a storm**

There's a USB port hidden at the back, but that's only for charging your phone.

**BEST FOR...**  
**USING IN MULTIPLES**

## Bayan SoundScene £180 / bayanaudio.com

**Make some noise**

It wouldn't be a real fight without a big old bruiser getting involved, and this is it. The Bayan SoundScene is a lot of speaker for your money. It's huge and it's heavy – you'll need two hands. In fact, just leave this out in the garden.

There it will do just fine: there's enough silicone to give it an IPX4 rating, which means it's weatherproof but not drowning-proof.

Connection is by way of straight-up 3.5mm input or Bluetooth. It's not aptX but there is NFC for speedy pairing. The SoundScene's party trick is literally a party trick: you can connect up to eight of these speakers, up to 100ft apart. Apologise to the neighbours in advance.

**Boom or fizzle?**

This one's a sorry fizzle. It's disappointing in sound and

performance, easily beaten by the cheaper Fugoo. As we'd expect from a large speaker, it's a big sound. But size, as we're assured, is not everything. Not when it sounds closed in and muffled, like Bane in *The Dark Knight Rises*. What you get is brash, unsubtle, and lacking in detail and balance.

We also found NFC to be hit-and-miss. Sometimes a tap wouldn't register at all; sometimes it would register, but refuse to connect. Adding an extra speaker is a little easier – just set one to transmit and the other to receive. It's not very intuitive, but once you get there it works fine.

**TECH SPECS****Dimensions**

270x125x125mm, 2.2kg

**Battery life** 8 hours

**USB** Yes **Waterproof** Yes

**STUFF SAYS** Disappointing – these are not the speakers you're looking for ★★★☆☆



## Ultimate Ears Megaboom

£250 / [ultimateears.com](http://ultimateears.com)

### Make some noise

Sometimes you just get the urge to hurl things. Then they break and you feel bad. Not so with the Ultimate Ears Megaboom, which UE reckons is nails-hard.

The original Boom was tough but the Megaboom has been reinforced, while rubbery bits and a 'plasma-coated' finish give it an IPX7 rating, which means it can sit underwater (or barbecue sauce) for 30 minutes.

Why? Because UE is gunning for the outdoorsy type. The bright blue version screams 'youth', although this black option is less attention-seeking. It also has a 100ft wireless range, NFC and a 360° sound field.

### Boom or fizzle?

Claims of indestructibility seem to hold up. We held it above our heads and

slammed it down. We buried it in ice. Then we took it to the bath, but it still came out singing. We didn't beat it with crowbars or throw it off the roof, but that would just be sadistic.

You can't miss the massive volume buttons, but for those who prefer software, the UE app gives you more to play with. You can add another Megaboom for stereo, and there are EQ modes to play with.

Its ability to disperse sound is remarkable, with good tonal balance, taut timing and brilliant dynamics. It's not as refined as the B&W T7, but we know which would win in a fight.

### TECH SPECS

#### Dimensions

226x83x83mm, 0.87kg

**Battery life** 20 hours

**USB No Waterproof** Yes

### Charge me!

Squeeze and hold both volume buttons and an ethereal voice tells you how much battery there is left. It's mildly unsettling.

**BEST FOR...  
HARD  
KNOCKS**



**STUFF SAYS** As tough as year-old beef jerky but a lot better-sounding ★★★★★

## Bowers & Wilkins T7

£300 / [bowers-wilkins.co.uk](http://bowers-wilkins.co.uk)

### Make some noise

When a manufacturer of esteemed hi-fi pedigree makes a small, affordable thing, you sit up and listen. The T7 is B&W's first portable Bluetooth speaker, and it is lovely.

The honeycomb frame looks like the sort of thing Darth Vader might keep evil bees in. This 'micro matrix' creates a solid, resonance-free structure. It's weighty, though not enough to be a burden. The rubbery edges give it some degree of protection, but don't go rock-climbing with it.

As for features, the T7 isn't a Swiss army knife. You get aptX Bluetooth and a 3.5mm headphone input, and that's your lot.

### Boom or fizzle?

The quality is extraordinary for a speaker of this size

and type. It's a natural, balanced performance: vocals are clear and open, and backed by the kind of solid bass that gets your heel tapping. It gets plenty loud with little effort – impressive dynamics and timing ensure precise, hard-hitting kicks.

And it's easy to use – you can pair your phone without frantic jabbing. A touch of the power button lights up a tiny row of LEDs, used to indicate battery life. B&W claims the T7 has 18 hours of juice, but we had no problem getting more than 24 hours.

### TECH SPECS

#### Dimensions

114x210x54mm, 0.94kg

**Battery life** 18 hours

**USB No Waterproof** No

**BEST FOR...  
SOUNDING  
GREAT**



### Buzzing along

The transparent honeycomb structure helps reduce cabinet vibrations that get in the way of good sound.

**STUFF SAYS** Good looks and portable hi-fi sound make this a winner ★★★★★



# There's a lot to be Z4 it

Sony's latest tab is a super-slim Android sensation with a tidy laptop-style keyboard

from £500 / [sony.co.uk](http://sony.co.uk)

■ The Sony Xperia Z4 Tablet is just 6.1mm thick and weighs a mere 389g. It comes bundled with a similarly skinny keyboard; together they're just under 800g. The water-resistant tablet isn't that different from last year's; it has a plastic outer shell, so it doesn't feel as cold and hard as an iPad Air 2.

■ However, this Android tab offers something worth ditching an iPad for. Plug in the keyboard and it's virtually a laptop, great for those who want to do some work instead of playing *Candy Crush Saga* all day long. It's neat: the BKB50 keyboard uses Bluetooth and a smart but simple hinge. The typing experience is reasonable, with crisp keys that trump most third-party keyboards.

■ Hardware-wise the Xperia Z4 Tablet makes a good alternative to the MacBook 12in, and it costs less than half the price. The 2560x1600 screen has an IPS LCD, which means it uses blue backlight LEDs instead of white ones, in order to get you super-vivid colours. A bit too vivid? If you like your colours super-accurate, yes.

■ The stamina is staggering for something this slinky. Sony claims up to 17 hours of video from one charge of its 6000mAh battery. Not even the extended *Lord Of The Rings* box set is that long, so you'll sail through a day's work, then play some games or watch a film later.

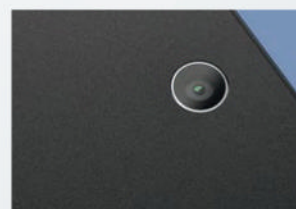
## Tech specs

**Screen** 10.1in 2560x1600 IPS LCD  
**Processor** Qualcomm Snapdragon 810 2GHz Octo-core **OS** Android 5.0 **Cameras** 8.1MP rear, 5.1MP front **Battery** 6000mAh **Storage** 32GB plus up to 128GB with microSD **RAM** 3GB **Dimensions** 167x254x6.1mm, 389g



## With great power...

Housing a Snapdragon 810 processor, this tablet certainly works well as a gaming device – there's no obvious lag or overheating. There's also a special move: it supports PS4 Remote Play.



## Pick your battles

Sony goes easy on the gas here: the rear camera spec is pretty low-end, but it does produce fairly zingy-looking photos. It's only when you zoom in that you notice they lack detail compared with those from a good phone.

**STUFF SAYS** Sony's top tab adds a serious side without turning down the fun dial ★★★★★

And we  
thought 10in  
tablets were on  
the way out...

Andrew Williams



Sony's stunning tablet on its own isn't a massive departure – it still has superb battery life, plenty of power, a slim body and a vivid screen; but by adding a keyboard, we get a whole new side to the Xperia Z4 Tablet. Now it's handy for work as well as play. It's a shame the keyboard costs over £100, but it really does make this an alternative to a Windows hybrid... and one that's a lot more fun for the sofa.



# msi®

MSI recommends Windows.

## THIN STEALTH TECHNOLOGY



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# Can you get a brilliant phone for £100?

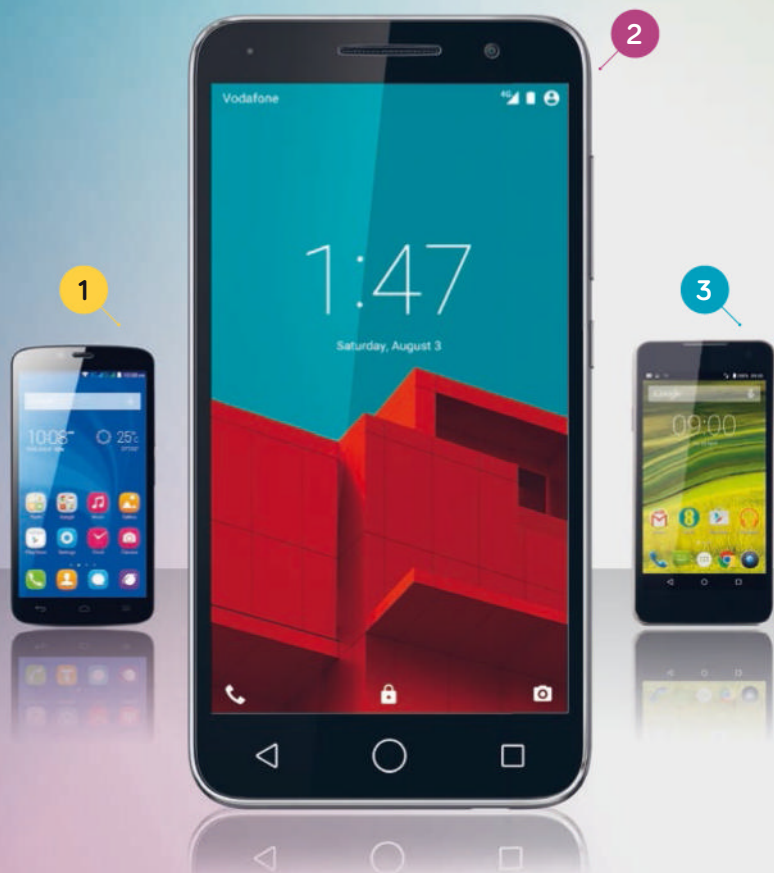
*Screen cracked two months into a contract? Just fancy a spare to travel with? Budget blowers are becoming seriously powerful*

**On average, you can save about £400 buying a budget smartphone instead of a top-end flagship.**

Imagine what you could buy with that: a holiday? A new hi-fi? Heck, you could get a serviceable second-hand car. So this month, we're waving bye-bye to the big boys to see exactly what grade of phone you can get for £100 or less. You might be surprised at what that little cash can snag you.

HD screen? Sure. Quad-core CPU that'll play all the latest 3D games? Yep. Add expandable storage, and you start to wonder why anyone would bother spending £500 on their next mobile.

From phones from the same stable as the big-budget Xperias to those direct from carriers and another from a brand you might not have heard of yet, these are the best sub-£100 phones in town.



**1 Honor Holly**

Take a chance on me, screams this new-brand phone, complete with a comparatively generous 16GB of storage. But no 4G.

**2 Vodafone Smart Prime 6**

Great specs, 5in screen, and it'll give you enough change from £100 for a month or two of data. Too good to be true?

**3 EE Harrier Mini**

EE takes on the Moto E with this £100 720p phone, offering something a little different with its bling'd-out style.

**4 Microsoft Lumia 635**

Embrace colour and a different way of living with this cute little Windows Phone mobile. Who needs Android anyway?

**5 Sony Xperia E3**

Sony's cheapest 4G phone gets you a solid, fast phone for well under £100. If you're already a fan of Xperias, this could be a great spare.





**6 Motorola Moto E 2015**  
The second-generation Moto E gets 4G and a faster processor to try to reclaim its crown as our top budget phone.



# The Moto E is back, and it's brought 4G along for the ride

**Want a dinky phone that doesn't seem to have all the best bits cut out just because it's a bit smaller?**

Jump on board with the Moto E. Unlike the first version, this second-gen model has 4G, a decent 8GB of storage and a pretty chunky battery.

It also lets you customise its look more than any other phone here, with clip-on colour borders

you can pull off with a fingernail. These help protect the outside too — scratch it up good and proper and you can still replace it.

The downside of a tech-packed phone with the footprint of a fieldmouse is that the Moto E is pretty tubby. It feels good, sure, but it's sort of fat and heavy. But it does have a damnably strokable dimple on its back. We just can't

stay mad at it for long. It's also probably the classiest number here, rocking 98% vanilla Android with just a couple of bonus Motorola apps changing things up a bit. Motorola's a fan of the 'keep it simple' motto. Others here should take note.

Of course, if you think that more is, well, more, the Moto may not be top of your list. It doesn't

have the largest, sharpest screen here — not by a long shot. Any gamers and those who spend hours a day glued to their mobiles should bear this in mind. The camera, too, leaves a fair bit to be desired (see below).

But if you value function over form and 4G internet access over small-screen TV watching, this is a phone to take seriously.

● MOTO E 2015 £100 ★★★★★☆



## SCREEN

### Small but (almost) perfectly formed

The Moto E has a modest 4.5in screen, which lets it get away with a 950x540 resolution. It's not quite as sharp or impressive as the five-inchers here, but looks good until you get really close up.



## PERFORMANCE

### Little screen, bigger CPU

Real vanilla Android tastes pretty sweet, especially in its Lollipop form. As it has a decent 64-bit Snapdragon 410 CPU but low-ish screen res, the E can handle jazzy-looking 3D games at high frame rates.



## CAMERA

### Lights, camera, action required

Oh dear. This second-gen Moto E makes loads of improvements, but the snapper is stuck in 2013. Pics from the 5MP main sensor start to look a bit yuck as soon as you start zooming in.



## DESIGN

### The soft touch

The phone equivalent of a hamster, the Moto E is dinky, chubby and cute. It feels great in your hand too, with a strokable soft backside. Tough unibody-style design makes it a good bludgeoning tool too. But don't do that.





# The unlocked outsider who wants to live in your pocket

**Don't want to be tied down? Not only is the Honor Holly sold unlocked-only, you can't even buy it from the networks.** It's a trip to Amazon needed for this one, which is the only true free-wheeler at this price with a 5in 720p screen.

That's great for games, and makes sure you don't get accused of using a phone that was a free

gift in a packet of cereal. It's a pretty serious handset for £90. With a smooth, super-shiny plastic body it's not all business, though. It's a bit tackier on the skin than some, but boasts great ergonomics thanks to smartly placed body buttons.

The bit that'll really raise a few eyebrows, though, is the software. This is the most unusual take on

Android: the EmotionUI front end dumps the usual apps menu for a more iPhone-like flavour. It might take a bit of getting used to. You're also not getting cutting-edge Android underneath, with KitKat rather than Lollipop.

As an apology you get a whopping 16GB of memory: up to four times more than some others on test here. That said, it

lacks 4G, so if you want to be able to download cat videos lightning-fast, you'll miss out. Deal-breaking error? Nah, the Holly just prioritises a nice screen.

This one is for people after something a bit different, and willing to go with a brand (actually a sub-brand of Chinese phone giant Huawei) that will be unfamiliar to most people.

● HONOR HOLLY £90 ★★★★★



## SCREEN 720p star

With 720p resolution spread across 5in, the screen is sharp and there's plenty of display space. The similar Vodafone and EE phones here get you slightly better colour, but other than those bargains this is the one to go for.



## PERFORMANCE Mixed Emotions

Meet the odd duck: EmotionUI. It's the Honor take on Android, and while colourful it feels a bit different to the other styles here. Performance is fine, but you may have to loosen up to get down with its ultra-flat style.



## CAMERA Video side order

8MP on the back, 2MP on the front: the Holly has pretty standard camera hardware. What makes it stand out is Live Photo, which ties a snapshot to a short video for extra-vivid, or embarrassing, memories.



## DESIGN Maximum shine

With glossy plastic all over the place, the Holly isn't trying to convince anyone it costs £500. However, it's nice and smooth, looks simple and puts all the right buttons in the right spots. Which is trickier than it sounds.





# A neon-bright Windows phone that's larger than life

**And now for something completely different. Forget Android – the Lumia 635 is all about Windows.** You get version 8.1 now, but are guaranteed a bump up to Windows 10 later this year.

But is it worth considering? Just look at it: rather pretty, isn't it? Still Nokia-branded, the Lumia 635 is a lot more eye-catching

than anything else here because of all that colour. Classic Lumia orange and green are on the roll call, as well as the more boring black and white.

After a few months on shelves, this is also one of the very cheapest ways to get hold of a 4G phone. And thanks to a cracking keyboard, browsing on this handset works well.

Windows might not be right for everyone, mind. There's almost always a long wait for apps before they arrive, as if they have to take a dinghy from the Android mainland – if indeed the developers decide to convert them at all.

That's the bad stuff out of the way. What about the good? Windows feels pretty sharp, even when you're dealing with a £70

phone. And you don't have to deal with lots of software fluff added on top: there's none.

Windows is worth a try. However, some of the side orders in the hardware aren't quite the tastiest money can buy. The camera is pretty low-res and you can't even take selfies with this little colourful brick, as there's no front camera.

● **MICROSOFT LUMIA 635 £70 ★★★★★☆**



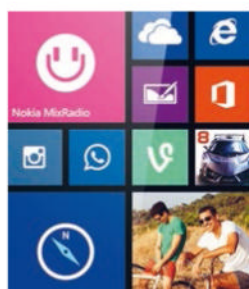
## SCREEN Pixel pincher

Need Retina-grade goodness? With 854x480 resolution, you can tell the Lumia 635 is working with not all that many pixels even at 4.5in. The contrast and colour are solid, mind, helping the display look rather punchy.



## PERFORMANCE Clean Windows?

One benefit of Windows is that even with just-OK hardware it's dead slick. You can fly around the interface like a puppy chasing a squirrel on an iced-over pond. But with a bit more control, thankfully.



## CAMERA 5MP papper

Want late-night party shots? With no flash the Lumia 635 may make your friends look like blurry ghost smudges. Got some daylight? It's all good then, and it can fiddle with shots before they reach your eyes.



## DESIGN Bright spark

Like a phone that looks as though it's been dipped in molten sweeties? That's the orange or green Lumia 635. The natty translucent finishes are more eye-catching than anything else here. Black is available too. But... boooo-ring.





# The snazziest cheap screen for film and gaming fans

**Want the biggest, sharpest, best screen you can get for £80? Stop right now, you're here.** This 5in 720p screen wouldn't look out of place on a £160 phone.

It's a sweet bargain... there are just a couple of bits you need to contend with. First, the giant light-up soft keys look like they've been borrowed from a toy for eight-year-olds. And there are

a bunch of preinstalled apps you probably don't want. Oh, and did we mention it's locked to Vodafone? That's probably important too.

If you can handle this and silence the part of you that really wants a Samsung, it's one of the best phones around. Good battery and GPU, not-that-terrible camera and surprisingly low-key

software make it a budget winner. Aside from Gok Wan-approved style, it has the lot.

So the question is: can you settle for Vodafone? It does have some decent SIM-only and PAYG bundles. But that's not much good if you're already happily shackled up with one of the other guys. Be sure to check out the Harrier Mini for EE's Prime equivalent.

Hardware-wise it's a bit of a love-in. You will need a little bit of patience, mind, as the Prime isn't immune to the occasional geriatric pause. It doesn't lack power, but at this price we're not surprised the software isn't perfect.

If you like a bit of gaming or want to watch videos on the move, you can't do better at this price right now.

● VODAFONE SMART PRIME 6 £80 ★★★★★



## SCREEN Screen king

With a 5in HD screen, the Smart Prime 6 takes a big slice of humble pie and smooshes it in the faces of all the big brands. Then takes some of the squirty cream on top and gives them a dairy-white smile.



## PERFORMANCE Lollipop lick

With a good quad-core CPU and software that looks like totally standard Android Lollipop, the Smart Prime 6 is 80% great. The 20% bad includes some so-so Vodafone apps and a few chuggy moments.



## CAMERA Making noises

If you don't mind a bit of noise, the Prime's camera isn't too shabby, packing in an LED flash and a nice 'n' simple camera app. It goes easy on the smoothing to keep as much detail from the 8MP sensor as possible.



## DESIGN Style council

Plain silver on the back, a bit juvenile on the front thanks to those softkeys, the Smart Prime 6 is a bit of an eyebrow-raiser. It's nice in the hand, though, with ergonomic buttons that make it comfortable to use.





# A fast, strong bruiser from a famous smartphone family

**Meet the brute. The Sony Xperia E3 is a phone that feels so solid you could use it like a ninja star and cause some pretty serious damage.** For a plastic phone, it feels super tough.

The big surprise, though, is that it's also dead nimble. The E3 fires up apps quicker than any other current Android. Sony has clearly put some special sauce in

the software to get it feeling this snappy. Or it could be the OS: this phone runs older KitKat, which could be more suited to slower hardware than Lollipop.

So it has that zip-zang-boom appeal... it's just a pity the rest of the E3's hardware is looking a bit musty in parts.

Take the screen. It's 4.5in, fine, but only brings 854x480 pixels

to the party. Next to the 720p phones it looks a bit craggy. There's also barely any free storage, and the camera's pretty miserable too. Sony made this as a cheap way to get 4G, but it has since been overtaken. And lapped a few times.

Without wanting to be too mean, it also has a kind of a doorman-like stature to go

with its resilient vibe. For a 4.5in phone, it's quite big. Maybe it ought to go easy on those protein shakes.

Is it a lame duck? While not the strongest budget phone in this test, the E3 does have superfast 4G, and the sturdy build makes it a match for those who don't want to mollycoddle their mobile.

● SONY XPERIA E3 £80 ★★☆☆☆



## SCREEN Pixel art

Next to the 720p phones on test here the 854x480 screen makes Android look a bit... blocky. The colours also lack a little subtlety, as if it's trying to make up for the pixel poverty with neon hugs. Not a highlight.



## PERFORMANCE Old-style speed

Sure, it uses old Android KitKat, but performance is very snappy. Sony has stupidly overloaded the phone with apps, though, sucking most of the paltry 4GB storage, leaving us just 1GB. A microSD card is an absolute necessity here.



## CAMERA Max fun

The E3 takes pretty low-res 5MP photos, not all that quickly, but it does have more bonus modes than any rival. Fancy using some vintage-y filters and superimposing some 3D AR dinosaurs onto your shots? Sure thing.



## DESIGN The brick

It's sturdy, but the E3 also has pretty chunky bits tacked onto the sides of the screen, making it feel a bit wide for a 4.5in phone. So while it's thin at 8.5mm, it may be more of a handful than you were expecting.





# For penniless magpies: it's sharp, shiny and lightweight

**If looks are important and you like a bit of bling, the EE Harrier Mini is one to check out.** Despite costing a fifth of the price of the smartphone kings, it struts onto EE's shop shelves with a pimped-up brushed metal finish and collar-popping gold accent around the camera. Is it fake? Of course it is. The back's still plastic. But at least it has a ballsy look.

Don't worry, EE hasn't pulled an Xzibit move and spent all the money on the paintjob. You still get a fast Snapdragon 410 CPU and a super-sharp 4.7in 720p screen. As it's a bit smaller than the Vodafone and Honor screens, this is easily the sharpest display in this test.

The Harrier Mini is the most pocketable of the bunch. It weighs

just 124g, which is roughly equivalent to an average-sized ball of mozzarella.

While this is an EE phone, meaning you get the logo on the back and one EE app, the rest is totally default Android Lollipop – although you do have to put up with having Deezer and Amazon's apps on board too. You simply can't ditch 'em. But the real issue

with this phone is that it has barely 1GB of free storage to play with. Install one data-hungry game and, poof, it's gone. Until you get a microSD card.

Despite having otherwise good specs, the Mini is on the slow side at times. Someone really needs to turbocharge its memory banks and get that Snapdragon 410 working as it should.

● EE HARRIER MINI £85 (PLUS £15 TOP-UP) ★★★★★



## SCREEN

### Retina grade

A 720p resolution at 4.7in gets you the sharpest screen on the block, with crisp images and smooth font. It's a nice display, if a bit cold-looking; this is a trick manufacturers use to make their screens seem brighter.



## PERFORMANCE

### Slow poke

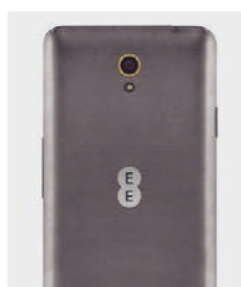
When it gets going the Harrier Mini is fine, but it's a bit of a slow starter, taking a little while to load some apps. Browse while downloading and you'll get a bit of lag. High-end 3D games? It's totally fine. Funny, that.



## CAMERA

### Steady hands

8MP camera? Check. Flash? Check. Selfie cam? Sure. It can take good shots too, although the results are a little variable and HDRs can be blurry if you don't stay very still. One of the better cameras here, mind.



## DESIGN

### The show-off

Calling all playas: the Harrier Mini is one of the only pimped-up budget phones, with faux metal and imposter gold all over the shop. It's not quite as hefty as the other phones here, though. Is lightweight good? Up to you.





# The winner is... Vodafone Smart Prime 6

**T**he moral of the story? Yes, you can get a fine phone for an absolute steal if you're willing to get one locked to a network. But there are also plenty of options for the floating handset fan.

Motorola's budget phones are still 100% rock solid, and if you're up for something a bit different you can get loads for your money by chancing it with a newer brand like Honor. C'mon, how often do you see a phone with 16GB storage for £90?

Play it safe with one of the big brands such as Sony or Microsoft and you'll end up with a phone that plays it safe on specs — they don't feel the need to show off to reel us in. As with breakfast cereal and toilet roll, it pays to buy the shop's house brand.

## + Now add these



### Chromecast

You can turn your £80 Android into a media streamer with

this awesome Google dongle. Plug it into your TV's HDMI, jack in the power and you're away.

£30 / [google.co.uk](http://google.co.uk)



### Sony SWR10

What better to add to a phone than a budget fitness tracker? No

screen, but you get step tracking, sleep tracking, vibrate notifications and music control.

£30 / [sonymobile.com](http://sonymobile.com)

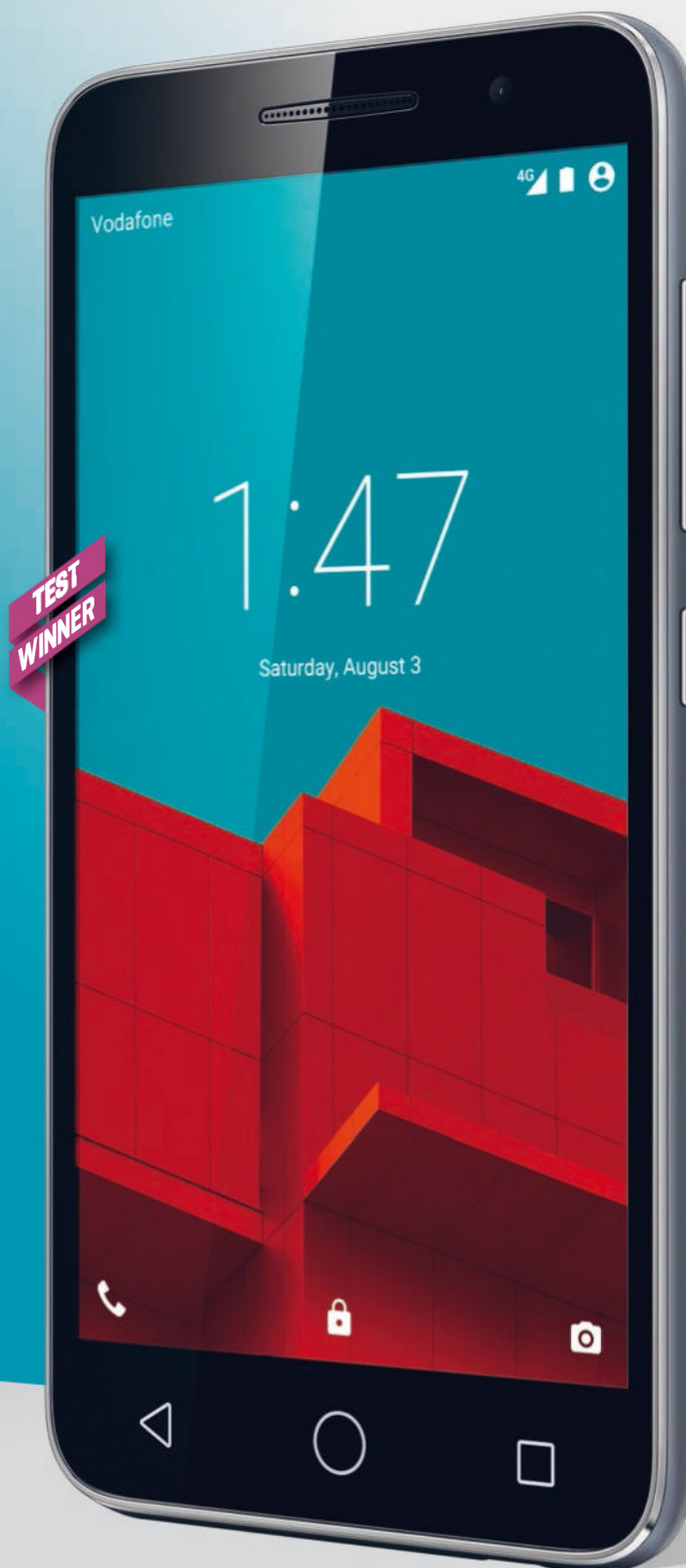


### Anker Astro Mini

Avoid phone charger anxiety with this tiny, pocketable charger. It

has enough capacity to fully recharge any of these budget phones.

£10 / [anker.com](http://anker.com)





## THE SUMMARY

● Vodafone Smart Prime 6
 ● Moto E 2015
 ● Microsoft Lumia 635
 ● Honor Holly
 ● EE Harrier Mini
 ● Sony Xperia E3

### SCREEN

10 9 8 7 6 5 4 3 2 1

### PERFORMANCE

10 9 8 7 6 5 4 3 2 1

### TECH RATER

### CAMERA

10 9 8 7 6 5 4 3 2 1

### DESIGN

10 9 8 7 6 5 4 3 2 1

## WHAT'S NEXT?



This year, most budget phones boarded the 4G train. The next step is to start getting 1080p phones under the £100 barrier. We're close, with Vodafone offering one for £125.

That should hopefully see Sony nudge the big companies into making an ultra-budget 720p, which will be exciting.

As USB-C becomes widespread, we'll see cheaper mobiles get on board with fast charging, which will mean a day's use from half an hour plugged in rather than overnight charging.

The other parts that are slowly getting better are speakers. They're easy to neglect but we're starting to see slightly better-quality drivers appear in cheaper phones. Given how often we crank out tunes through our phones in the kitchen, this is a very good thing. But let's keep the headphones plugged in on the bus. Deal?









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		Screen	Processor	Cameras	Storage	Battery	Dimensions	
1st		<b>Vodafone Smart Prime 6</b> A cracking bargain for those who don't mind shacking up with Vodafone. <b>£80 / <a href="http://vodafone.co.uk">vodafone.co.uk</a></b>	5in 1280x720 IPS LCD	1.2GHz Snapdragon 410	8MP rear, LED flash, 2MP front	8GB (+up to 64GB microSD)	2500mAh	141.7x71.9x 9mm, 155g
2nd		<b>Moto E 2015</b> Motorola cuts out all the guff for pure phone protein, just lacking a few higher-end bits. <b>£100 / <a href="http://motorola.com">motorola.com</a></b>	4.5in 960x540 IPS LCD	1.2GHz Snapdragon 410	5MP rear, VGA front	8GB (+up to 32GB microSD)	2390mAh	129.9x66.8x 12.3mm, 145g
3rd		<b>EE Harrier Mini</b> Cracking specs and eye-catching design are let down by patchy performance. <b>£85 (plus £15 top-up) / <a href="http://ee.co.uk">ee.co.uk</a></b>	4.7in 1280x720 IPS LCD	1.2GHz Snapdragon 410	8MP rear, LED flash, 2MP front	8GB (+up to 64GB microSD)	2000mAh	138x67.9x 9.5mm, 124g
4th		<b>Microsoft Lumia 635</b> It's gagging for a higher-res screen but this Windows phone can otherwise compete with some of the best. <b>£70 / <a href="http://microsoft.com">microsoft.com</a></b>	4.5in 854x480 IPS LCD	1.32GHz Snapdragon 400	5MP rear, no front camera	8GB (+up to 128GB microSD)	1830mAh	129.5x66.7x 9.2mm, 134g
5th		<b>Honor Holly</b> A sharp screen and oodles of storage make this the winner for media hoarders. <b>£90 / <a href="http://hihonor.com">hihonor.com</a></b>	5in 1280x720 IPS LCD	1.3GHz MediaTek MT6582	8MP rear, LED flash, 2MP front	16GB (+up to 32GB microSD)	2000mAh	142.2x72.3x 9.4mm, 156g
6th		<b>Sony Xperia E3</b> Screen and camera aren't tip-top but it feels fast and is solidly made. <b>£80 / <a href="http://sony.co.uk">sony.co.uk</a></b>	4.5in 854x480 IPS LCD	1.2GHz Snapdragon 400	5MP rear, LED flash, VGA front	4GB (+up to 32GB microSD)	2000mAh	137.1x69.4x 8.5mm, 144g



# Hi-def from above

DJI bills its Phantom 3 Professional as the ultimate flying camera. Sam Kielsen spends a fortnight finding out if this is a top quadcopter or a top quad-flopter

£1160 / dji.com



## DAY 01

There's a knock at the door, and a beaming courier hands me a package. He's only so cheerful because he doesn't know what he's parting with: the Phantom 3 Professional, DJI's latest drone. This flying machine packs a 4K camera and so many smarts that a 10-thumbed four-year-old couldn't crash it.

I'm exaggerating, but it really is incredibly easy to use. A mere 30 minutes later, this white plastic

hawk is soaring through the skies over leafy south London. Even though the Phantom 3 is hovering some 200m away and 120m above me, I'm viewing a pristine 720p live feed of the drone's view on my Nexus 7 tablet, which is mounted on the control and connected via USB.

Using that remote control and the free DJI Pilot app (Android/iOS), I can fly it wherever I want within a huge radius, viewing its

position on a map and info on altitude, speed, battery life and more. That's all to a range of up to 1.2 miles – although by law you must keep quadcopters within visual range at all times, so I'm not putting its limits to the test. Honest, officer.

And the camera? Well, while I can't check my footage out here 'in the field' (a park), it seems wonderful. I can record video in 4K, 1080p or 720p quality, or 12MP photos in JPEG or RAW, onto an onboard microSD card, tweaking settings on my tablet and tilting the camera between horizontal and straight down. I'll

find out tonight how good the quality really is...

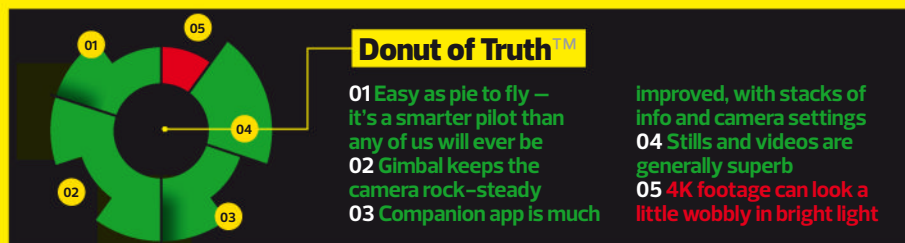
A three-axis gimbal keeps that camera level and pointed in my desired direction no matter which way I move the drone, while the wealth of sensors on board (GPS, GLONASS, compass, gyroscope, and an all-new down-facing camera) serve to keep this flying machine steady no matter how much wind assails it.

After 20 minutes of flying, the app beeps to tell me the battery is running low. I land the drone easily, and look up to see a small crowd of onlookers. Luckily I wore a clean shirt today.



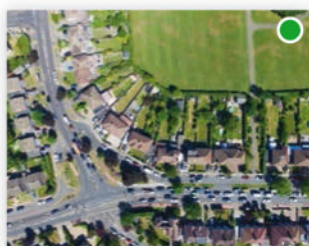
Even though the drone is hovering some 200m away and 120m above me, I can view a pristine 720p live feed on my tablet





## Tech specs

**Max flight speed**  
16m/s  
**Max ascent speed**  
5m/s  
**Max altitude**  
6000m  
**Max flight time**  
23 minutes  
**Camera** 12MP sensor, f/2.8 lens  
**Video** 4096x2160 at 24/25fps;  
3840x2160 at 24/25/30fps;  
1080p/720p at 24/25/30/  
48/50/60fps  
**Weight** 1.28kg



### DAY 02

I check the previous day's footage and stills. It's mighty impressive. It was a sunny summer's day and the still pictures are crisp, detailed and noise-free.

The 1080p videos are lovely: smooth, silky 50fps motion as the drone glides over houses, trees and streets. And the 4K? Not so great. While the detail levels are astounding, the rolling shutter (the sensor captures each frame in a sweeping pass rather than in one go) makes things look wobbly — not what I was hoping for.

### DAY 03

More 4K recording. Turns out you can mitigate the jelly effect by fixing the shutter speed to 50... but that's not always possible without massively overexposing everything. Sigh.

That aside, this thing is incredible. I've flown the Phantom 2 a lot and the 3 is better in every major respect: image quality, battery life, ease of use and safety. And the quality of the app's video streaming makes for a much more pleasant flying experience.

### DAY 05

I do wish the battery life was longer. Despite 23 minutes being the longest Phantom flight time yet,

and the charger topping it up fairly swiftly, it does go by quickly — and if you've taken the drone out somewhere for the day, that's your lot until you can find a power socket. I guess that's why DJI sells extra batteries (at £125 a pop).

### DAY 09

I'm feeling more confident than ever about flying this thing... time for an evening flight. As I glide like a guillemot through Bromley's sunset skies, flashes of lightning from a faraway thunderstorm are caught on camera. Nice.

Low-light footage and photos are a lot grainier than those taken in good light, however. The camera's Exmor R sensor is decent, but like a smartphone camera the Phantom 3 Pro does have its limits compared to bulkier cameras with larger sensors.

### DAY 14

I'm going to really miss this clever bird. Sure, its 4K recording leaves a little to be desired, but otherwise it's a truly fantastic gadget — one that gives you a new perspective on the world and does so without making you jump through too many irritating hoops.

And if your bank balance doesn't stretch to it, go for the HD-shooting Advanced model (£900), which is pretty much the same drone.

## STUFF SAYS

**A pro-level aerial filming tool that requires only amateur piloting skills to get dazzling results**

★★★★★





# Batman: Arkham Knight

The Caped Crusader returns for the final instalment in Rocksteady Games' dark, widely acclaimed series. Set one year after *Arkham City*, is it a worthy finale?

**N**ow that you mention it, Batman does have a fair bit in common with *Knight Rider*'s Michael Knight. They both represent corporations bearing their names, they're both good at being presumed dead, and they're both in danger of being upstaged by their cars. This is particularly true for Batman in the finale to the *Arkham* series, because the Batmobile is now very much a character. Tearing around Gotham in several tonnes of transforming tank that runs through concrete

like it's wet cardboard is more than just fun. It's the most liberating experience I've had since the naked trolley dash that got me barred from Waitrose.

The vehicle changes the way you interact with the city. You bring it in remotely to assist in team fights, use it to scale walls with the ejector seat, and bring it into one of The Riddler's puzzle dungeons to help you with a conundrum. It's not so much a car as an extra limb.

But while Michael Knight (they

have the whole 'knight' thing in common, too) was just a fairly normal man on foot, Batman's latest incarnation excels at stylish caped combat. And you'll be amply supplied with targets, facing a trained militia with all sorts of new tricks up its soldiers' sleeves, including thermal-imaging-resistant camouflage and pesky drones that can shock you from your vantage point.

The transitions between stealth, beat-'em-up, *Carmageddon*-style vehicular violence and puzzler are

seamless, and every element feels made with huge amounts of care and attention. Of special note, though, is the plot, which brings about some clever visual and environmental techniques to showcase the best of gaming as a narrative form. The Scarecrow-induced hallucinatory sequences are without a doubt the series' strongest set pieces yet.

This game doesn't just have brawn, it has some serious brains to match. Top of the class.

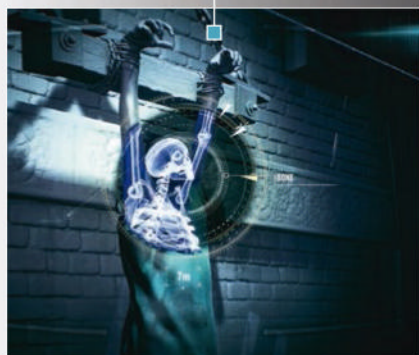
**Justin Mahboubian-Jones**

**STUFF SAYS** Stop what you're doing, don the cape and enjoy *Batman* at its very best ★★★★★

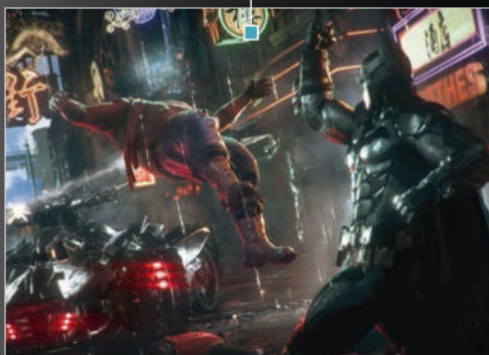




Mini games are littered throughout; here Bruce scans a body for clues



This little trick is known as the Batmobile-assisted takedown — we approve



### Batmobile, beautiful Batmobile

This is no slapdash automobile bolt-on. The Batmobile sections of *Arkham Knight* are plentiful and add a whole extra dimension to the proceedings. The car is such a character in its own right that it features its own upgrade tree system in which you can make it faster, stronger and more capable of doing even more completely unrealistic but completely awesome things.

Bruce's motor is something of a Swiss army knife, if a Swiss army knife was a hugely powerful vehicle covered in guns. It can be driven like a car, but at the click of a button it spreads its wheels, extends a barrel and becomes a tank. When in this mode it is capable of 360° motion, although it also slows down a fair bit.

It's as a bat-tank that the batcraft becomes a little less realistic and a little more fun: it can scale roofs, use a winch to pull itself up vertical walls and wreak maximum bat-havoc on the bat-tiefield. And there's plenty of havoc to be wrought: skirmishes often involve deluges of enemy rockets and swarms of enemy drones, and while the Batmobile's superior speed and firepower make it a force to be reckoned with, using it does not equate to an automatic win.



PC / [elderscrollsonline.com](http://elderscrollsonline.com)

# The Elder Scrolls Online: Tamriel Unlimited

From the icy peaks of *Skyrim* to the plains of *Morrowind*, Bethesda's MMO stitches together its previous hits into a monster of a map

It's a nice idea: take the worlds from the previous Elder Scrolls games, and meld them into a Pangaeon supercontinent where players can roam for years on end, exploring, fighting, stealing, crafting and getting beaten up by dragons. But while *Skyrim* fans will find some familiar material within the giant world of Tamriel, the execution doesn't deliver on the grand promise.

Half the game is a traditional MMO, in which you wander the land looking for quests, most of which take place in dungeons known as Delves. The jobs on offer are ones you've completed in many games, many times before – kill a certain number of monsters, retrieve a magical goat's foot on behalf of a magical nincompoop. It's here that the shortcomings of the vast environment become clear: to fill it, the designers have had to resort to gaming by numbers. The results feel more like work than play.

It's lacking in atmosphere, too: where *Skyrim*'s scenery and plotting brought a nerdy franchise

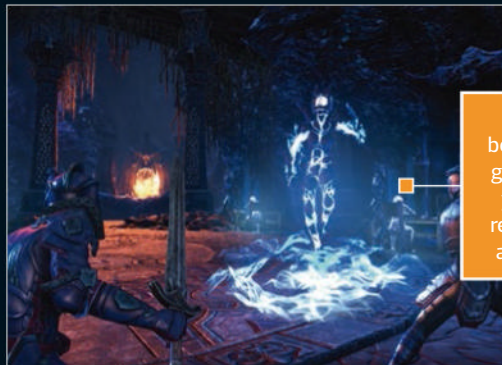
to the masses, even the mighty Michael Gambon can't make this feel particularly magical.

The other half of *ESO* is almost entirely disconnected from the first. In Campaign Mode, players battle one another for control of the map in large-scale wars. Each player picks one of three factions, and these alliances thrash it out for dominance. This can be a fun challenge, especially when 40 players decide to storm the same objective. Unfortunately the process is not as quick or satisfying as it should be. *PlanetSide*, this ain't.

Where *ESO* does shine is in the combat and character development. Slowly developing your abilities into a combat style that suits you is satisfying, but no more so than in *Skyrim*.

If you're so in love with MMOs that you dream of hotkeys, or so deeply enchanted by Tamriel that you've drawn elves on your latest holiday brochure, then give it a try. Otherwise, there are better ways to slay your valuable time.

**Justin Mahboubian-Jones**



'Delves' are best tackled in groups unless you want to receive a fiery arse-kicking



The characters may not behave in interesting ways, but they sure are handsome

**STUFF SAYS** The Scrolls have passed through elderly, and into just plain old ★★★★★



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# Media hoard

Hello. I am *Stuff's* eerily convincing new humanoid AI sub-editor. Here are some reviews of the latest watching, listening and reading matter. You must now read them.

WATCH

## Humans DVD

**I**s there anything left for science fiction to say about robots? From Asimov to *Ex Machina*, it feels as though the Uncanny Valley has already been mined to exhaustion. But while its themes might be last-gen, this smart British reboot of the Swedish drama *Real Humans* has an Apple-like ability to make well-worn ideas feel shiny and new.

Set in a 'parallel present' London, *Humans* revolves around a suburban family who draft in the services of a 'synth' called Anita (played brilliantly by Gemma Chan) to help around the house. And they're not early adopters either – humanoid helpers are everywhere, acting as robot Taskrabbits

for their increasingly reliant (and unemployed) society.

Naturally, all is not quite as it seems with Anita. As we meet some of her fellow synths – including a care worker, a prostitute and two renegades on the run – it becomes clear that some of them might be a bit more sophisticated than your average Roomba.

*Humans* isn't the first drama to fire a warning shot about the dangers of AI. But like *Black Mirror*, its humdrum realism and fine cast show that this kind of tech, with all the 'big questions' it raises, has already taken its first steps into our homes.

Mark Wilson

STUFF SAYS ★★★★★☆



## Run All Night

\_Blu-ray, DVD, VOD

Liam Neeson's made his film again – but this time it's not called *Taken* and the people he wants to hurt really badly are American. This equitable approach to violence is to be applauded, but the "Don't mess with me" shtick is getting tiresome. We've had enough *Taken* sequels – and this is that in everything but name.

Tom Wiggins

STUFF SAYS ★★★☆☆



## While We're Young

\_Blu-ray, DVD, VOD

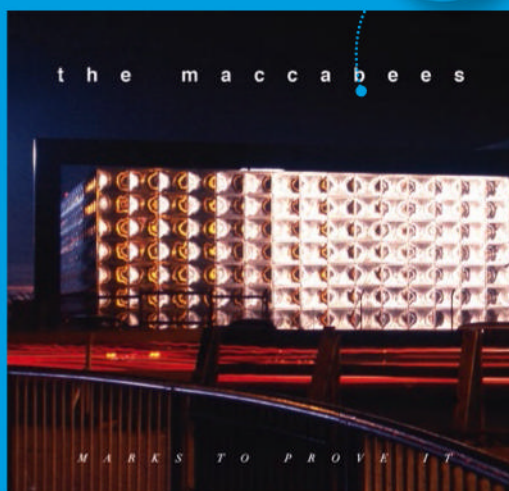
Josh is 44, owns CDs and watches Netflix on his Apple TV. Jamie is 20-odd, only plays vinyl and uses a CRT TV to watch '80s horror movies on VHS. This slightly-too-stereotypical comedy of generational differences starts off well, but the gags give a little too much space to a study of authenticity.

Tom Wiggins

STUFF SAYS ★★★★★☆



## LISTEN



## Marks To Prove It

\_The Maccabees

With the lout-rock of Kasabian on one side and the earnest Mumfords on the other, *Marks To Prove It* should've cemented The Maccabees' place as heirs to the Arctic Monkeys' throne. But rather than building on *Given To The Wild*, it feels too much like more of the same.

The title track barges down the doors and barrels along like it escaped from

the *GTTW* sessions but then things flatten, rising briefly for *Spit It Out* and *Something Like Happiness*. With even Glastonbury struggling for British headliners, this a missed opportunity for a band that a few years ago looked to be on the cusp of something great.

Tom Wiggins

STUFF SAYS ★★★☆☆



## Another One

\_Mac DeMarco

He flirts with cheese and he wears dungarees, but is there any substance behind DeMarco's kooky slacker persona? Maybe. The breakthrough album *Salad Days* had some luscious tunes but was a bit samey; this 25-minute follow-up is... well, more of the samey. And there's nothing as catchy as *Let Her Go* on this one.

Richard Purvis

STUFF SAYS ★★★☆☆



## Dark Black Makeup

\_Radkey

Radkey are the only all-brother band to matter since Hanson. Pretty bold statement, I know. They play punk rock with huge fuzzy riffs, groovy bass and Danzig-like vocals. The resulting sound is body-moving in every way — but the production sounds a bit muddled on record, so live is the best way to experience it.

Ross Presly

STUFF SAYS ★★★★★

## READ



## How Music Got Free

\_Stephen Witt

Everyone already knows how music got free. It was all Napster's fault, right? Wrong! At its core, *How Music Got Free* tells three different stories, which all come to a head at just the right / wrong time.

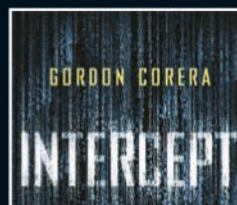
For a tale that deals largely in codecs and corporations (at least in the early stages) it's surprisingly witty, and at times reads like an

organised crime thriller... but the Michael Corleone of this story is a nerdy factory worker from North Carolina.

For anyone who remembers Audiogalaxy and Kazaa, *How Music Got Free* manages to be simultaneously eye-opening and nostalgic.

Tom Wiggins

STUFF SAYS ★★★★★



## Intercept

\_Gordon Corera

The BBC's security correspondent gives a smart account of how espionage and computing grew up together, from the Enigma and Colossus machines of WW2 to the vast complexities of data processing that rule the modern world. Read it for a keener understanding of the NSA and the Edward Snowden affair.

Will Dunn

STUFF SAYS ★★★★★



## Daft Wee Stories

\_Limmy

A BAFTA-winning comedy writer and prolific Viner, Brian 'Limmy' Limond has written slightly too many tales for his debut book. You get the sense that many are vaguely autobiographical; but while they can get a little formulaic, there's a decent hit-rate of genuine lolz, and fans should definitely give this a look.

Tom Wiggins

STUFF SAYS ★★★☆☆



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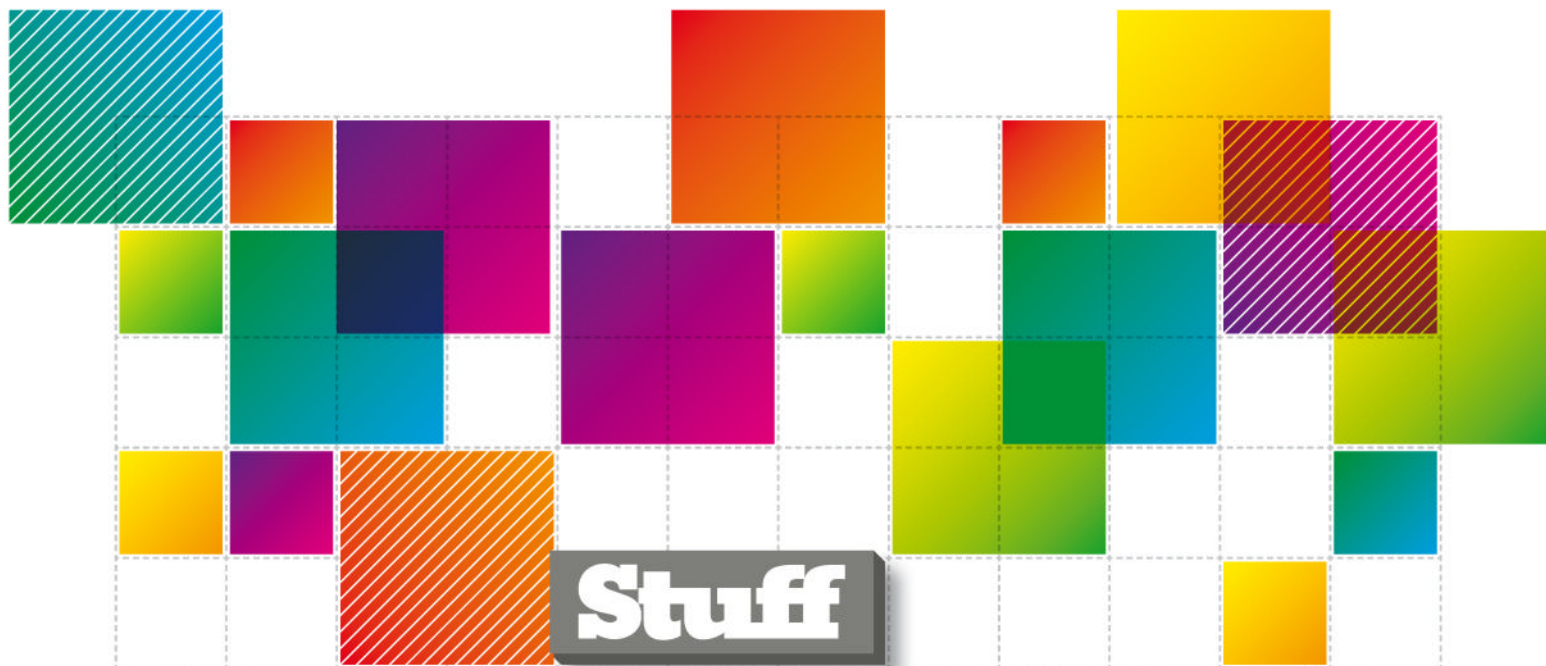
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2014 Silverstone lap data	Top Speed Kph	Ave Speed Kph	Fastest Lap
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<b>Moto2™</b> - 600cc 4-stroke motorcycle + rider min 215 kg	<b>277.5</b>	<b>166.9</b>	<b>2'07.253</b>
<b>Moto3™</b> - 250cc four-stroke one-cylinder engine motorcycle + rider min 148 kg	<b>233.4</b>	<b>158.9</b>	<b>2'13.664</b>

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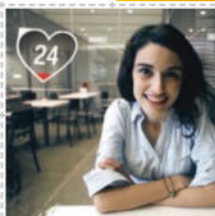


# PROJECTS

MAKE. DO. UPGRADE.



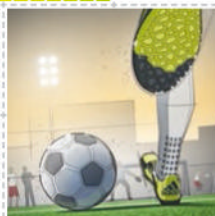
**p104**  
**BETA YOURSELF:**  
**UPCYCLING**  
There is no rubbish, just gadgets you haven't rebuilt yet



**p106**  
**PLAYLIST:**  
**VIMEO SHORTS**  
The finest little flicks on the thinking person's video website



**p108**  
**SUPER GEEK:**  
**MOUNTAIN BIKES**  
A dirt-trails expert hits the gnarl on the head



**p110**  
**INSTANT UPGRADES:**  
**5-A-SIDE**  
Get more out of the sweatiest form of football





BETA  
YOUR  
SELF

## UPCYCLING

Got a shedload of antique tech and a weekend to burn? Revamp ninja and reestore.com founder Max McMurdo shows you how to make your old things feel like new

## THE BASICS

■ **Cast your net wide.**

You can find amazing materials in the most surprising of places. Gumtree, local industrial estates, skips and charity shops can all contain upcycling gems.

■ **Don't be a copycat.**

While it's good to earn your stripes by learning from other upcycling projects, try to be brave and take risks. Upcycling's all about creating something that reflects your taste and style.

■ **Start simple.**

If you're a complete upcycling beginner, try something simple



like reupholstering and painting a dining chair. Or if you're feeling more bold, play around with an old pallet and try to create something unique.

■ **Don't be a tool.**

A screwdriver, cordless drill and hammer are refurbishing essentials, but don't forget

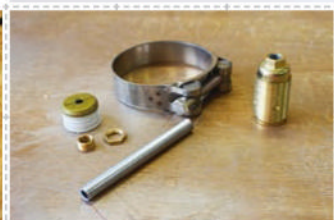
sandpaper, wax and a staple gun for preparation and crucial finishing touches.

■ **Bigger is better.**

I sometimes find the larger the item, the easier it is to work with, as it isn't as fiddly. Wine barrels can make a good starting point. Even cars can be fertile ground – we turned a V8 engine into a coffee table.

■ **Make it last.**

Choose your materials carefully and avoid chipboard at all costs. Always use mechanical fixings like screws and bolts where possible – the world isn't held together with PVA glue.



## THE PROJECT

■ **Gather your ingredients.**

Wine bottles provide a vintage glow for this distinctive lamp. You'll also need pallet wood, M10 nuts and bolts, a large jubilee clip, and electrical fittings: lamp holder, in-line switch, three-core cable and plug.

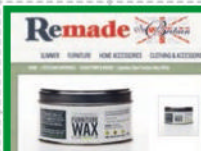
■ **Tool up.** Grab a mitre saw and cordless drill for assembling the woodwork, plus screwdrivers, wire cutters and spanners to fit the electrical components.

■ **Bottle it.** Ask a glass merchant to cut the bottle, or do it yourself (very carefully) using a bottle-cutting kit.





## LEVEL UP WITH...



### THE WEBSITE REMADE IN BRITAIN [remadeinbritain.com](http://remadeinbritain.com)

Like an Etsy for upcyclers, Remade lets you list and buy everything from an aircraft easy chair to a 'Super 8' desk lamp. Those looking to dabble in making their own creations will find some useful advice in its blog too, including interviews with eminent UK makers and a handy A-Z of objects to upcycle.



### THE WEBSITE PINTEREST [pinterest.com](http://pinterest.com)

It's not all hairstyles and interior decorating on Pinterest (well, not quite anyway). The social pinboard is a good place to scout for upcycling ideas, like skateboard guitars (above), seatbelt key holders and mason jar speakers. If you're taking your first Pinterest steps, start by following the likes of Upcycle Studio and MFEO.



### THE BOOK UPCYCLIST £20 / [amazon.co.uk](http://amazon.co.uk)

This debut book from the blog of the same name ([upcyclist.co.uk](http://upcyclist.co.uk)) weaves together photography and interviews with innovative upcyclers. They go a little beyond wine-cork USB sticks, with chapters covering everything from bicycle chandeliers to a house made almost entirely from reclaimed window frames. Just don't let it intimidate you into giving up on that oar curtain-rod.



## THE PROCESS

■ **Give a helping sand.** After cutting the wood, sand it with coarse then fine sandpaper.

■ **Build it up.** Fix to the base using 50mm screws. Now fix the bolt across the top to house the jubilee clip around the shade.

■ **Go electric.** Take a metre of the three-core cable; attach the plug to one end and the switch to the other. Connect a second half-metre cable to the other end of the switch, then thread the exposed part through the bottle and fix in place. *Warning: Mains voltages are dangerous. If in doubt, consult an electrician.*



## FINISHING TOUCHES

■ **Get a signature look.** I love to add personal touches. For this one we added the Brancott Estate logo. It looks as though the wood came straight off an old wine crate.

■ **Sweat the details.** I complemented the gorgeous green glass shade with a nice burgundy twisted cord. It adds a real touch of retro class.

■ **Face the wax.** Autentico wax (from £11, [amazon.co.uk](http://amazon.co.uk)) doesn't only make the wood look good – it also brings out the grain, smells incredible and nourishes it so that it lasts.



## NOW TRY THESE

■ **iMac cat bed.** Just because the iMac G3 is no longer an object of desire, doesn't mean you can't celebrate its beauty. Instructions: [bit.ly/imaccatbed](http://bit.ly/imaccatbed)

■ **TV fish tank.** This is a lot more work than meets the eye, but a great talking point for your home – particularly if the remote controls the lighting: [bit.ly/tvfishtank](http://bit.ly/tvfishtank)

■ **Gramophone lamp.** I've got an old metal gramophone horn from a charity shop that's crying out to be turned into a lampshade. For inspiration go to [etsy.com/shop/ruevertdegris](http://etsy.com/shop/ruevertdegris)





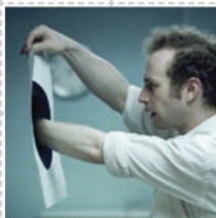
# PLAYLIST

## VIMEO SHORTS

YouTube's all well and good if you want to watch kittens on Roombas, but real film buffs go for Vimeo. Here are its finest short films — and all but three of them are free to view

### Logorama

This film is set in a world where every person, animal, plant, building, vehicle and even geographical feature is built out of corporate logos. Mr Pringle flirts with the Esso girl, Michelin Man cops pursue a Joker-esque Ronald McDonald, and the Haribo Kid visits a zoo populated with Lacoste crocodiles and Linux penguins.



### The Black Hole

A sleep-deprived office drone discovers a magical portal that lets him pass through solid surfaces — and is quickly undone by his greed. The winner of the 2008 Virgin Media Shorts competition, *The Black Hole* is a textbook example of short-form comedy. It delivers suspense, setup and punchline in just two minutes. Bite-sized brilliance.



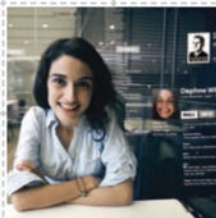
### Pixels

Inspired by 8-bit video games and '80s comedies like *Who Framed Roger Rabbit*, director Patrick Jean's high-concept short pits New Yorkers against pixelated invaders from vintage arcade games, rendered in all their blocky glory. A *Ghostbusters*-style adaptation starring Adam Sandler is coming.



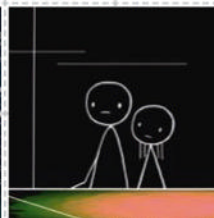
### The Landing

Set in the early '60s in the heartland of America, this short draws heavily on Cold War paranoia and fears of UFO landings. The mood is oppressive; a young boy's fantasies of rocketships and alien invaders are brutally squashed by his alcoholic father. And then something falls from the sky... To say more would spoil it.



### Sight

This short should give pause to anyone who's excited by Microsoft HoloLens. It's a vision of an AR dreamworld; computer-generated artwork hangs on blank walls, people use apps in all basic interactions and gamification has got out of hand. *Sight* shows a future we could be unwittingly stepping into.



### World Of Tomorrow £3 (to rent)

Oscar-winning animator Don Hertzfeldt takes his first foray into all-digital animation. It features a little girl, Emily, and her guide, a time-travelling third-generation clone. It's touching, thought-provoking and funny, cramming in ideas at the rate of Terry Pratchett or Douglas Adams.

### Kung Fury £5 (to buy)

From the school of parody that brought you *Far Cry 3: Blood Dragon* and *Vice City* comes this riff on '80s action films, packed with every cliché you'd expect. The titular hero's a maverick cop with Kung Fu powers and a Lamborghini; villains are gangs of *Warriors*-esque thugs and, yes, Nazis.







## HOW TO... GET SHORTY

Fancy making your own short film? A smartphone and these nifty accessories are all you need...



### FILMIC PRO

This year's Sundance Film Festival showcased *Tangerine*, shot on an iPhone 5S using this app. It gives you full control over focus, aperture and colour temperature. Android fans should see the similar Cinema FV-5. **£6 / iOS**



### MOONDOG LABS ANAMORPHIC ADAPTER

This clip-on adaptor lets you shoot video with a 33% wider horizontal field of view on your iPhone and adds flares and cinematic distortion. **from US\$160 / [moondoglabs.com](http://moondoglabs.com)**



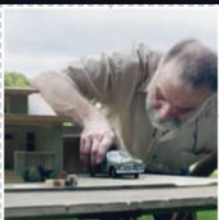
### SHOULDERPOD S1 SMARTPHONE GRIP

This will hold any phone up to 93mm wide, adding a universal mount that will let you plant it on a sliding dolly, a tripod or even a steadycam rig; perfect for giving your film a professional gloss. **£25 / [amazon.co.uk](http://amazon.co.uk)**



### Alive In Joburg

In faux-documentary wobbly hand-held style, this gritty sci-fi film examines the aftermath of an alien landing in Johannesburg; the extraterrestrial refugees are quickly isolated in ghettos, unable to get home. Does that sound a bit familiar? Director Neill Blomkamp used this short as the basis for his feature, *District 9*.



### Elgin Park

Photographer Michael Paul Smith has won legions of fans for his snapshots of mid-20th-century American towns created using meticulously detailed miniatures and clever optical illusions. But as this documentary shows, this isn't just a slice of retro whimsy; it's intimately tied in with Smith's personal identity and history.



### The Phone Call US\$3 (to rent)

A crisis helpline worker takes a call from a suicidal man in this Oscar-winning short anchored by powerful performances from Sally Hawkins and Jim Broadbent. It's a testament to what you can do with a simple premise and a pair of fine actors — one of whom delivers his performance entirely as a voiceover.



### Truth In Journalism

The latest part of Adi Shankar's 'Bootleg Universe' enlists *True Blood* star Ryan Kwanten for a gritty black-and-white homage to *Man Bites Dog*. Like the film that inspired it, it features a crew of filmmakers following shady photojournalist Eddie. But this tour of New York quickly veers off into marvellously unexpected territory.



SUPER  
GEEK

# MOUNTAIN BIKES

**Dave Jaquin explains why hurtling up and down gnarly trails is the best time you can have on two wheels, and why your post-ride refreshment choice is crucial**

**W**hen the mass media lit a firecracker under the world of cycling, it suddenly became cool to squeeze into stretchy Italian fibres in a bid to roll through parks and earn a post-ride coffee. Don't get me wrong – I ride a road bike too, but only so I'm fit enough to get out on my mountain bike for longer.

What grew from a few guys hurling themselves down a Californian dirt road in the early '70s has morphed into a wild beast, one that's best tamed with a bunch of friends. It's about

variety – no trail will be the same two days in a row, and you will notice if you ride it on both of those days. The geometry, suspension and gearing of modern machines are amazing, and bikes that go up as fast as they go down can now be found in any decent shop.

The spectrum of riding is broad. If you want to go as fast as possible on the wildest tracks, then downhill racing is where it's at. But if you want something more sedate with a bit of speed here and there, cross-country (or XC) could be your ride of

choice. Right now, the best for all-day riding are bikes with 140–160mm of suspension travel that fly up the hills while maintaining the ability to charge back down them. Some do one better than the other, but as a general rule this category of suspension travel defines the most popular trend in the mountain biking world.

Jumping on a mountain bike will surprise you. Get yourself one, set it up properly, then head to the woods with some other mountain bikers and start finding the point where your tyres begin

to let go. I guarantee it's the most fun you can have with your socks on.

You'll bump up against the limits of grip fast, but keeping things rubber-side-down is a slowly acquired skill. It's often the brakes that cause the problem – momentum equals grip, so try to roll with it.

Oh, and you can forget that coffee. Your post-ride drink now comes from a bag full of leaves with a helping of milk – and there's no better way to earn your brew than sliding round corners with your mates.

## JARGON BUSTER

### TRAVEL

Travel refers to the amount of movement the suspension has from being fully extended to completely compressed, and is measured in inches or millimetres.

### WHIP

This means throwing the bike sideways and extending the back wheel as close to 90° as you can while maintaining a stylish shape with your body.

### BERM

A berm is a built-up corner that gives you ample opportunity to lean into the turn. Think of a solid dirt wave curved around the outside of a turn. Hit it flat out and a good berm will pop you out with more speed than you entered it with.

### ROOST

That big trail of dirt thrown out, up and sideways when riders hold the throttle wide open out of a corner. This isn't about skidding – roost flies when tyres are sliding, not braking.

STRIPPED-  
BACK  
RIDE

## WHYTE 905

Simple, but very effective. UK-based bike designer Whyte has refined its 905 into a bike that's fast, fun and well thought out. The geometry is bang-on and the money is in the right places when it comes to its components. An adjustable fork, some of the best all-round rubber going and the most reliable rear wheel out there all ensure that the 905 stands for quality. Riding a hardtail is honest, no-frills biking. The skillset is different from a full-suspension bike, but hone yourself on a hardtail such as the 905 and you'll be set up to progress fast when you decide to add a bit of bounce to the back.

£1600 / [whyte.bike](http://whyte.bike)

ALL-  
MOUNTAIN  
STEED

## ORANGE FIVE FACTORY

An iconic stalwart. Orange has been making the Five for years and every new model is a subtle refinement of the last. For a full-suspension bike it's simple, and that's the beauty: one pivot and two wheels equals a heap of fun. The Five will take you anywhere, on any type of trail, and you will see someone riding one pretty much everywhere you go. The geometry is right up to date, and the suspension is a doddle to set up. If you want to do it all, then the Five hits the nail on the head with a big hammer from Halifax. This is the new tricked-out, top-end Factory model, but the Five range starts at £2600.

£4600 / [orangebikes.co.uk](http://orangebikes.co.uk)





## MONDRAKER SUMMUM PRO TEAM

Spanish company Mondraker pushes mountain-biking boundaries, and this bike marks the finest achievement of that expansion. Designed to take on Downhill World Cup races, it has over eight inches of rear-wheel travel and almost the same up front. In short, this means it will punch through whatever it's pointed at. Bikes like this are for downhill tracks ridden at full speed. They might be expensive, but everything has been dialed to 11. If you want to go flat-out in the rough stuff then this is what you've been waiting for.

£6800 / [mondraker.com](http://mondraker.com)

DOWN-  
HILL  
MISSILE

## GET INSPIRED



### THE APP

#### INSTAGRAM

Biking and photography go hand in hand, and some of the sport's finest snappers are on Instagram. Sven Martin (@svenmartinphoto), Duncan Philpott (@duncanphilpott) and Sam Needham (@samneedham\_photo) shoot everything from the world of racing to adventurous trips around the globe, so give them all a follow.

Free / Android, iOS



### THE WEBSITE

#### DIRT

This specialist magazine has grown up with mountain biking for the past 18 years. Now web-only, it mixes deep knowledge with features that celebrate all aspects of the sport, from component reviews to impressive 'beyond the bike' mini-documentaries that follow the careers and enviable lives of biking superstars.

[dirtmountainbike.com](http://dirtmountainbike.com)



### THE FILM

#### SPRUNG

Filmmaker Alex Rankin's late-'90s mountain biking movies still stand out as the best documents of the sport. The bikes may have changed and many of the riders have since become superstars, but 1998's *Sprung* (and later *Earthed*) series mix local riding trickery with pros ripping through long race sections.

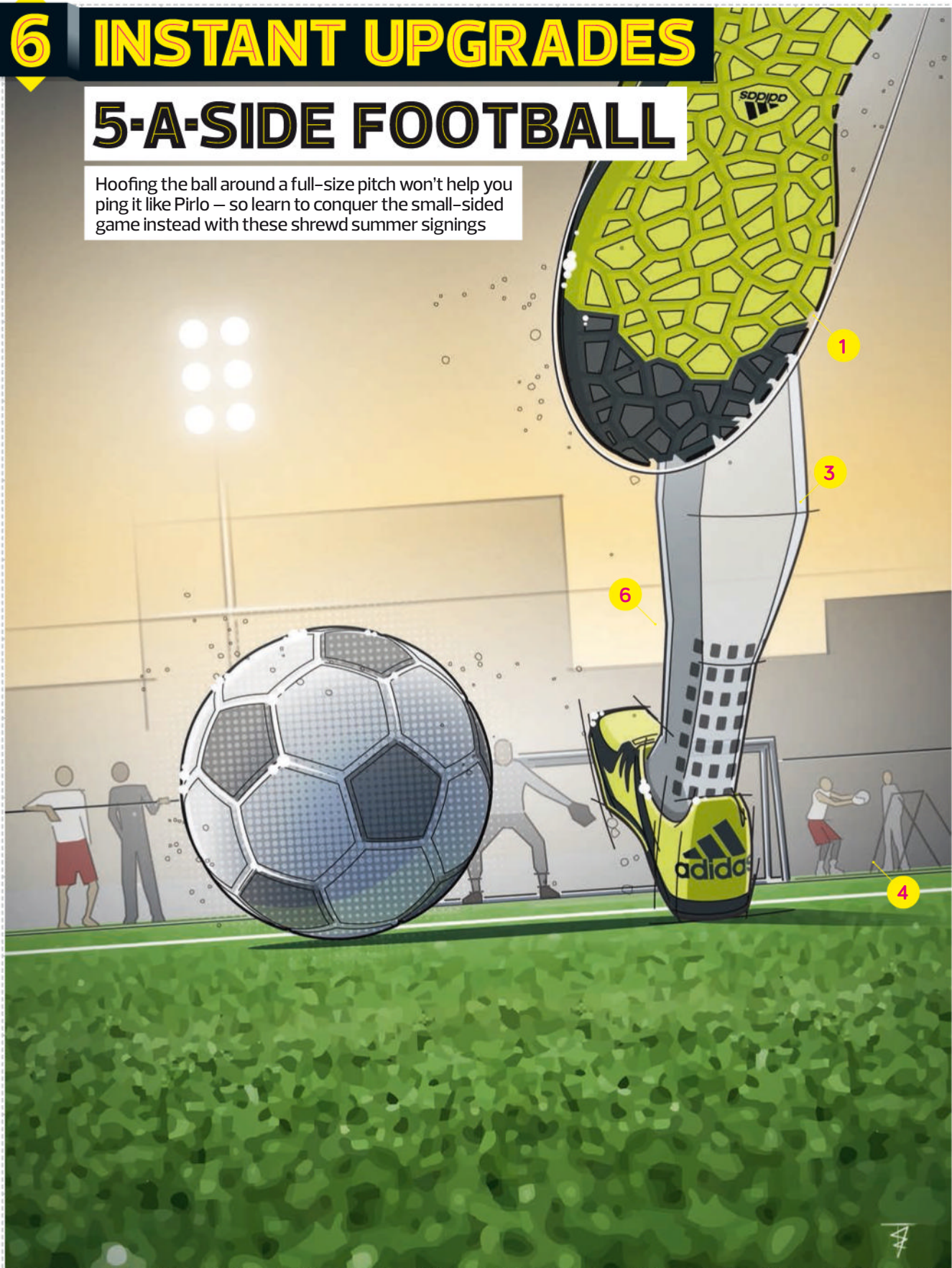
[youtube.com](http://youtube.com)



# 6 INSTANT UPGRADES

## 5-A-SIDE FOOTBALL

Hoofing the ball around a full-size pitch won't help you ping it like Pirlo – so learn to conquer the small-sided game instead with these shrewd summer signings







### 1 ADIDAS X15.3 TF

You can't expect to befuddle defenders while wearing a pair of shoes you've dug out of lost property. These new 'turf' boots have been designed specifically for 3G pitches and the pinball pace of 5- and 7-a-side games. Their rubber studs are on hand to provide maximum grip for your signature pirouette, and there's no need to fear a sloppy first touch – the close-fitting mesh upper will ensnare the ball like a Venus flytrap. Not that defenders will be able to see anything after looking at that 'solar yellow' paint job.

£50 / [adidas.co.uk](http://adidas.co.uk)



### 2 NIKE SELECT STRIKE WOVEN SHORT II

Football shorts have seen some difficult times, from Dixie Dean ankle-swingers to 1980s 'minimalism'. Luckily, we live in 2015, where shorts such as these are designed with the same precision as Mourinho's spoiling tactics. The Select Strike's laser-cut vents keep you cool during heated battles, while their tailored fit allows enough movement for a defence-splitting pass. It's a lot to spend on shorts, but why invest in a fancy top that'll only get covered by a bib?

£50 / [prodirectsoccer.com](http://prodirectsoccer.com)



### 3 TRUSOX

Observant 'soccer' viewers will have spotted a breakout of tiny squares around the ankles of players such as Suarez, Bale and Sturridge recently. Another fashion *faux pas* to rank alongside Alice bands, snoods and nose strips? Not this time, as the little squares are actually non-slip pads that help prevent feet from sliding around inside boots. That means fewer blisters to worry about and more stability in your planted foot when the time comes for you to attempt a ludicrously ambitious free kick.

£25 / [trusox.com](http://trusox.com)



### 4 CRAZYCATCH WILDCILD DOUBLE TROUBLE

Whacking a ball against a wall has honed the skills of many a top-class footballer, but these days it's more likely to earn you an ASBO than a pro contract. Redirect your practice with this training aid. Its name might suggest 'sports-based erotic movie', but as a rebound net it's unrivalled. The unpredictable bounce will test your first touch, control, passing technique and reaction speed. It's particularly good for fast goalie warm-ups.

£120 / [prodirectsoccer.com](http://prodirectsoccer.com)



### 5 FIELDWIZ

Fancy GPS tech is no longer the preserve of the pros – you too can see how far, or little, you chugged around the pitch. Strap on the FieldWiz in its comfy vest before you step into the arena and you'll be able to capture strategic performance metrics. The wearable sensor technology will record your stats so you can analyse your performance with Sky Sports-style heat maps including distance, speed and acceleration figures. You might need sponsorship from Emirates to afford it, mind.

£2500 (team) / [fieldwiz.com](http://fieldwiz.com)



### 6 PUMA EVOPOWER 1 SLIP

With bone-crunching defenders hot on your heels you're going to need to upgrade your armour. Invest in this lightweight pair of slip guards and your shins will be protected when wayward challenges meet your lower limbs. Their foam shell is built to absorb impact so you can dust yourself off and carry on with the game. This armour isn't going to weigh you down either – the Lycra compression sleeve with athletic tape keeps the pad in place without holding you back.

£35 / [puma.com](http://puma.com)

## WENGER'S TOP TIPS

### ARSENAL BOSS ARSÈNE REVEALS HIS SECRETS TO 5-A-SIDE SUCCESS



#### 1. PERSONALISE YOUR POSITIONS

"Quiet, efficient guys make the best strikers. Those who are more gregarious and outgoing are made for midfield. The more aggressive ones are your best defenders. If you get that right, their natural qualities develop, they become better in their positions and your team can progress."



#### 2. USE A DIAMOND FORMATION

"I recommend the 1-2-1 formation: one defender, one attacker, with two offensive full-backs. These two players should fall back and defend when you don't have the ball, but be ready to get forward and attack when necessary. This formation will allow you to play the most effective 5-a-side."



#### 3. COUNTER-ATTACK BEATS POSSESSION

"Most goals come from a quick burst upfield: one or two passes and then shoot. Teams that have too much of the ball have the least success. Be quick and ruthless. By sitting back you are tempting your opposition to lose their shape, frustrating them, before winning the ball and scoring on the break."



## G A D G E T

## D O C T O R



## ALWAYS ON CALL

facebook.com/joinstuff @stuffTV  
google.com/+stufftv stuff@haymarket.com



## MAIL OF THE MONTH

## Q SENSOR SENSIBILITY

I have a Nikon D3100 with an 18-55 kit lens and a 55-300mm and I'd like to upgrade, ideally to a full-frame sensor. I don't want to have to buy new lenses, so I'd like a new camera body that would be compatible with the ones I have now. What's the best solution?

Robbie Barnes

A Robbie, pairing a cheap lens with an expensive full-frame body is a waste of sensor size. So if you want to keep your current glass, you're better off upgrading to a better crop camera such as the Nikon D5300 (about £470) or D7200 (£850), and saving the extra money for better lenses to go with it later on.

Speak your brains and you could win a 6-month **SPOTIFY PREMIUM SUBSCRIPTION**. This letter wins six months of ad-free, high-quality audio streaming from Spotify, worth £10/month



## Q CAN'T STAND IT

Dear *Stuff*, I've recently upgraded the old gogglebox to a swanky new Sony KD-65S9005B. I'm absolutely loving this new curved, 65in slab of techy goodness but unfortunately it's not being displayed to its full potential, currently sitting atop an old Ikea shelf unit. I want a TV stand that will support it but, at the same time, not cost half again what I paid for it. Also, it should tie in with my grey wood-effect flooring and dark grey recliner sofa (with media tray). Any suggestions would be much appreciated.

Gary Benson

A Congratulations on introducing such a formidable beast into your living room. While taste is subjective, we reckon the simple-yet-stylish Centurion Avitus all-black affair (£200, amazon.co.uk) should serve you well. Its finish should match its surroundings nicely, and it's easily sturdy enough to support your 65in friend without any trouble. You'll also have plenty of storage to tidy away consoles, Blu-rays and other bits and bobs.

## Q EAR IT COMES AGAIN

Hi *Stuff*, I need to get some more comfortable headphones that won't make my ears sore if I wear them for too long. Do you have any suggestions? Cheers!

Fergus Irvine

A There's nothing quite like ear cramp and a splitting headache from uncomfortable headphones to ruin listening to your favourite Richard Clayderman album. The Bose SoundTrue On-Ear headphones (£130, amazon.co.uk) have received rave reviews for being

comfortable enough to make you forget you're even wearing them. They're light, portable and, importantly, they also sound fantastic, so you won't have to compromise on audio quality either. They're also available in mint green, which may or may not be relevant.

## Q OLED, OH DEAR

Help! After purchasing a Toshiba 36in CRT Home Cinema TV a few too many years ago, I can't seem to wear the damned thing out. I have my heart set on a new slim OLED smart TV with all the latest bells and apps, but my old TV refuses to die. When it does eventually fizz, buzz and pop I'll be looking for something around the 50in mark and with a budget of around £750-£1000 (if a piece of fruit from Cupertino doesn't tempt me first). Any suggestions?

Nick Miles

A Nick, sadly there's just no way you'll be able to snap up an OLED TV for less than



£2000 at the moment – they're still firmly at the luxury end of the scale, despite a steady price drop over the past few years. It's hard to say when they'll dip to the £1000 mark, but we'd bet on a few years at least. If you're desperate for a big TV now (and can add £500 to your budget), then you can't go wrong with the 4K 55in Samsung UE65HU7500 (£1500, amazon.co.uk). Our friends at *What Hi-Fi?* have slathered it with awards and praise, thanks to its incredible picture, elegant design and smart interface, so you definitely won't be disappointed.







# 5-MINUTE HACKS

## IF NOTHING ELSE, AT LEAST...



### 1 MAKE A HANDLEBAR BIKE RACK

Already rustled up a wine bottle lamp (see p104)? Time to upcycle an old pair of drop handlebars into a wall-mounted rack for your trusty road bike:

**Gather the ingredients.** You'll need some drop handlebars, a quill stem, a threaded piece of galvanised steel pipe that fits your stem, a wall flange, some screws and a drill.

**Head to the shed.** Put your handlebars into the stem, attach your pipe to the wall flange, then insert your quill into the pipe.

**Hang your masterpiece.** Measure how high you'd like the bike to hang, then drill and attach with your screws. For full instructions go to [kylethewilson.wordpress.com](http://kylethewilson.wordpress.com) and search 'DIY wall bike hanger'.

### 2 GET A GUIDED DRONE TOUR

You could use Street View to get a sneak peak of your holiday destination – or you could go one better and get a dramatic bird's-eye tour using this 'DroneTube' video map:

Go to [travelbydrone.com](http://travelbydrone.com) and search by the location you'd like to fly over, or lose several hours by clicking on random videos of Eastern European cities and checking flight prices on Kayak.

**Looking for a different kind of wedding photographer?** Click on the 'pilots' tab to see a map of commercial drone pilots based on their location, together with their contact details to request a fly-by bridal shoot.

**To watch some of the world's finest drone-ography,** go to the 'Best of 2015' tab and see spooky Chernobyl and volcanic Iceland in full-screen glory.



### 3 PLAY HANGMAN IN ANY APP

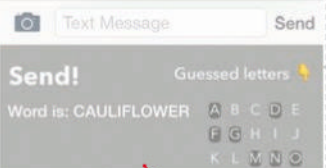
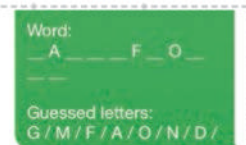
Well, in any messaging app, at least – install this custom iOS keyboard and you'll be embroiled in more letter-themed chats than Rachel Riley:

**Download HangKeys** (Efree, iOS).

Though it's an iPhone app, your friend won't need HangKeys to play – it's purely text-based, and your game will appear in your chosen messaging app.

**Open Settings.** Now select 'General', then 'Keyboard' and finally 'Add new keyboard'. Select HangKeys and then open your preferred messaging app, whether that's Facebook Messenger, WhatsApp or SMS.

**To play, press and hold the globe icon** on the iOS keyboard. Choose HangKeys and start your game. Feeling evil? Start with some tricky Hangman classics: 'jazz', 'faff' or 'axiom'.



### TUNE IN NEXT MONTH TO...

● Geek out with guitar amps ● Get up high for some aerial photography ● Delve deep into the world of subreddits





# Stuff

# TOP

# TEN

## OF EVERYTHING

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 For full reviews of every product in the top 10s, visit [stuff.tv/reviews](http://stuff.tv/reviews)



<div>HOT BUY</div> <div>1</div>		<h3>Samsung Galaxy S6</h3> <p>This is a new era for Samsung, with a smart upgrade that fixes not just things that were amiss in the Galaxy S5, but things that have plagued them for years. No plastic here: its front and back are super-tough Gorilla Glass 4, its sides aluminium. In terms of ergonomics and speaker quality, HTC still wins, but only just. And in the more important areas of camera performance, screen tech and raw power, the Galaxy S6 tramples its rival. We just wish it had a microSD slot.</p>	<div>STUFF SAYS</div> <p>Samsung has proven its critics wrong – the Galaxy S6 is the new benchmark for flagship phones</p> <p>from £440 ★★★★★</p>
2		<h3>Samsung Galaxy S6 Edge</h3> <p>The Edge, with its wraparound screen, is the ultimate money-no-object phone. It's techier and beefier than its brother, but it's also a good deal pricier. Its curvy USP may be more about style than anything else, but come on, it's pretty darned cool.</p>	<p>from £525</p> <p>★★★★★</p> <div>BEST FOR CUTTING-EDGE GADGETEERS</div>
3		<h3>LG G4</h3> <p>The leather-clad LG G4 is a treat for those who want something that looks and feels a bit different. Its camera is incredibly powerful, giving you almost as much control as a DSLR, and the large screen is brilliant... but the battery life holds it back from the top.</p>	<p>£450</p> <p>★★★★★</p>
4		<h3>HTC One M9</h3> <p>This year's HTC One is not a full-on revolution, but it is a careful, considered refinement of one of the best phones ever, packing high-end specs into a premium design. The switch to a megapixel main camera results in beautifully detailed daytime shots.</p>	<p>£460</p> <p>★★★★★</p>
5		<h3>Motorola Moto X</h3> <p>Smart, fast and nicely crafted, the Moto X is packed with clever software that organises your life without feeling intrusive, and the brilliant Moto Maker service allows you to build a genuinely personalised smartphone in wood, plastic or leather.</p>	<p>from £265</p> <p>★★★★★</p>
6		<h3>LG G3</h3> <p>There's barely a single thing wrong with the G3... and so, so much that's right. Upgrades range from sleeker back buttons to the bigger, better 2K screen and laser-assisted camera. And it still lasts 15 hours. How do they do it?</p>	<p>£270</p> <p>★★★★★</p>
7		<h3>Apple iPhone 6</h3> <p>With its slim, deeply attractive build and software overhaul, the iPhone 6 is the freshest-feeling iPhone in years. Its larger screen is big enough to be a useful improvement, with gorgeous colours, and this is Apple's best ever battery.</p>	<p>from £480</p> <p>★★★★★</p>
8		<h3>Sony Xperia Z3 Compact</h3> <p>This is, without a shadow of a doubt, the best sub-5in Android phone around. The power of a full-size flagship, an excellent camera and an impressive battery life are all crammed into a device that's a pleasure to use no matter the size of your digits. Impressive stuff.</p>	<p>£300</p> <p>★★★★★</p> <div>BEST FOR DAINTY HANDS</div>
9		<h3>Samsung Galaxy Note 4</h3> <p>Samsung was first at the phablet game, and with the Note 4 it's still the best. The ace camera, Multi Window feature and pressure-sensitive S Pen make proper use of the extra screen real estate. Plus, it has the longest battery life of any 2K phone we've tested.</p>	<p>£380</p> <p>★★★★★</p>
<div>NEW</div> <div>10</div>		<h3>Vodafone Smart Prime 6</h3> <p>Want the biggest, sharpest display for under £100? This 5in 720p screen wouldn't look out of place in a phone twice the price. If you like gaming or want to watch videos on the move, this is a real bargain – as long as you don't mind being locked to Vodafone.</p>	<p>from £80</p> <p>★★★★★</p> <div>BEST FOR SMALLER BUDGETS</div>

● Prices quoted are for handset only unless otherwise stated

FOR THE FULL REVIEWS AND OUR SMARTPHONE BUYING GUIDE, VISIT [STUFF.TV/TOP-10S/SMARTPHONES](http://STUFF.TV/TOP-10S/SMARTPHONES)

## PLUG INTO STUFF'S SOCIAL NETWORK



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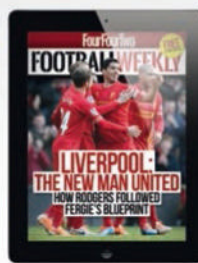


<b>HOT BUY</b> <b>1</b>		<b>Apple iPad Air 2</b> The iPad Air didn't really need to be thinner, but that doesn't mean 6.1mm isn't mighty impressive. This combines with reassuring weight and impeccable build quality to make this the most desirable tab on the planet. While the display is the same Retina resolution as before, clever screen tech brings the pixels closer to the surface, and the whole experience is even faster than before thanks to the new A8X chip. Basically it's the best tablet in the world made even better.	<b>STUFF SAYS</b> Thinner, lighter and mightier: Apple's iron-fisted reign at the top of the tablet charts continues unabated from £400 ★★★★★
<b>2</b>		<b>Apple iPad Mini 2 With Retina Display</b> The iPad Mini 3 is newer but all it adds is Touch ID. The good news is that the Mini 2 is now down to £240, which is frankly bargain-tastic. That's why the 'old' model stays in our Top 10 – if you're after a mini-tablet of real quality, your choice has just got easier.	from £240 ★★★★★
<b>NEW</b> <b>3</b>		<b>Sony Xperia Z4 Tablet</b> Sony have added a keyboard to this already stunning tab, so now it's handy for work as well as play, just like a Windows hybrid. Superb battery life, plenty of power, a slim body and super-vivid screen make this the best Android alternative to an iPad Air 2.	£500 (with keyboard) ★★★★★
<b>4</b>		<b>Samsung Galaxy Tab S 10.5</b> Samsung has blessed the Galaxy Tab with one of the best tablet screens we've ever laid eyes on, plus an impressive camera and some incredible stamina – but there are performance niggles and Apple's tablet app selection is still far superior.	£315 ★★★★★ <b>BEST FOR</b> MAGAZINES AND MOVIES
<b>5</b>		<b>Tesco Hudl 2</b> At this price, the Hudl 2 has far more tech rammed into its 9.85mm-thick body than you'd ever expect. It has a Full HD screen, and its 273ppi display offers the sharpest of images. This is a jaw-dropping bargain, as long as you can put up with Tesco bloat.	£100 ★★★★★
<b>6</b>		<b>Microsoft Surface Pro 3</b> At last, Microsoft has delivered on the promise of the tablet-cum-laptop hybrid. It proves there's space in the world for a design that's more productive than an iPad or Galaxy Note, but easier to hump around than a traditional laptop.	from £660 ★★★★★ <b>BEST FOR</b> WORKING ANYWHERE
<b>7</b>		<b>Asus Transformer Book T100</b> A stonkingly affordable tabtop with raw power, a neat design and great battery life – perfect for Office on the go, thanks to Intel's new Baytrail CPU. The 1366x768 screen is a good 'un too, with crisp text, great contrast and colours that pop.	£230 ★★★★★
<b>8</b>		<b>Google Nexus 9</b> The design isn't as pristine, but this is a real Android contender to rival the iPads. You get the new Android 5.0 Lollipop software, bags of power and a super-sharp display. With 12 hours of video play and two front-facing speakers, it'll be a great film buddy.	£280 ★★★★☆
<b>9</b>		<b>Sony Xperia Z3 Tablet Compact</b> A slim, light and reliable couch or commute companion, with a screen that looks brilliant despite being 'only' Full HD. The waterproofing may sway people away from choosing an iPad Mini and every gamer's eyes will light up at the mention of PS4 Remote Play.	£270 ★★★★☆
<b>10</b>		<b>Microsoft Surface 3</b> Microsoft finally nailed the hybrid formula with the Surface Pro 3, and now it's translated it to this: a smart, ultra-portable design with the benefits of full Windows 8.1. It's easily the best affordable Surface yet. Just make sure you buy the keyboard.	£380 ★★★★☆ <b>BEST FOR</b> GAMING ON THE GO

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<b>HOT BUY</b> <b>1</b>		<b>Sonos multiroom system</b> Who needs to drill holes and replaster walls to get a multiroom music system? Not you. With the addition of the cracking little Play:1 (£170) Sonos has made it easier than ever to start spreading your tunes around. Then maybe hook up a Connect to your existing hi-fi and router, and add speakers to a Connect:Amp in another room, or a SUB for a bass boost. You'll run out of rooms before you run out of options. For a further upgrade, the Arcam rSeries SonLink DAC works a treat with the Connect.	<b>STUFF SAYS</b> Infinite music in every room without the need for custom installers? Sign us up now, please from £170 ★★★★★
<b>2</b>		<b>Naim Mu-so</b> £895 for a wireless speaker?! Well yes, but what a wireless speaker it is. Naim has ploughed all of its high-end hi-fi experience into delivering a beautifully made, great-sounding device with AirPlay, Spotify Connect and aptX Bluetooth all on board.	£895 ★★★★★ <b>BEST FOR</b> ONE-BOX WI-FI HI-FI
<b>NEW</b> <b>3</b>		<b>Bowers &amp; Wilkins T7</b> The T7 is B&W's first attempt at a portable Bluetooth speaker, and its good looks and real hi-fi sound combine to make it a real winner. It's solid and easy to use, and has an attractive honeycomb structure that helps reduce cabinet vibrations.	£300 ★★★★★
<b>4</b>		<b>Monitor Audio Airstream S200</b> It may look a bit like a floppy skyscraper, but the Monitor Audio's Bluetooth-plus-AirPlay speaker makes a lot of sense, mostly because it takes up very little shelf/desk/table space but makes loads of lovely noise. It's a bit of a steal at £200.	£200 ★★★★★ <b>BEST FOR</b> PICNIC PARTIES
<b>5</b>		<b>Cambridge Audio Go</b> There are loads of very cheap Bluetooth speakers out there, but we reckon it's worth spending that little bit more to get something that's really good – and that's the Go. It sounds awesome, it's really nicely built and its battery lasts a massive 18 hours.	£90 ★★★★★
<b>6</b>		<b>Bluesound multiroom system</b> Fancy a bit of Sonos-style multiroom but with better-than-CD-quality sound thrown in? You want Bluesound. There are all-in-one speakers, adapters for your existing hi-fi, and a Vault that rips and stores all your CDs. All can handle high-resolution audio.	from £400 ★★★★★
<b>7</b>		<b>Audio Pro Addon T10</b> Available in orange, white or black, the Addon T10 is a Bluetooth speaker that also has analogue inputs and a USB socket for charging your MP3 player. Sound-wise it's punchy and deep, with just a little too much bass. It sounds best in orange, obviously.	£200 ★★★★★ <b>BEST FOR</b> AL FRESCO PARTIES
<b>8</b>		<b>Libratone Zipp</b> A fuzzy, cylindrical, colourful AirPlay dock that will deliver detailed, punchy 360° sound anywhere at all, thanks to a built-in battery that gives it four hours of outdoor life. Direct Wi-Fi skills free you from cables, routers and everything but the boogie.	£300 ★★★★★
<b>9</b>		<b>Cambridge Audio Minx Xi</b> It might not look all that fancy, but the Minx Xi is like that micro system you had at uni, only it gobbles internet music rather than Rage Against The Machine CDs. Just add a pair of quality speakers (try Wharfedale Diamond 220s) and you've got a great hi-fi.	£400 ★★★★★
<b>10</b>		<b>Q Acoustics BT3</b> These ultra-versatile Bluetooth speakers have an optical input for waking up the audio of your flatscreen TV. The styling is simple and so is the sound – brilliantly so, with perfect hi-fi balance and an impressive focus to the stereo image.	£210 ★★★★★

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<b>HOT BUY</b> <b>1</b>		<b>AKG K451</b> They've actually been around a little while now, but what put the K451 on-ears back on to our radar was an official price drop from £130 to £80, and a real-world price of just £50 or less. For that money they're unbeatable – awesomely agile and punchy sound wrapped up in a subtly stylish and foldable design. Add both standard and three-button control cables for maximising compatibility and there's practically no excuse for not getting brilliant sound from your phone.	<b>STUFF SAYS</b> Fantastic sound and great portability at an almost unbeatable price: the perfect phone upgrade <b>£50 ★★★★★</b>
<b>2</b>		<b>Bowers &amp; Wilkins P5 Series 2</b> Even the most demanding audio buff would find it hard to fault these – B&W have delivered a pair of premium on-ears that look, feel and sound exquisite. You control playback and volume with your iPhone, while feeling like a VIP guest at an intimate gig.	<b>£205</b> ★★★★★
<b>3</b>		<b>Philips Fidelio M1 MkII</b> Your commute deserves a quality soundtrack, and second-generation Fidelio M1 headphones give you precisely that. There's oodles of detail to the sound and they punch harder than the Hulk. Beats and their ilk can't touch them.	<b>£175</b> ★★★★★
<b>4</b>		<b>SoundMagic E10S</b> This is actually the third version of SoundMagic's awesome, affordable in-ears – not that you'd tell by looking. They sound even better, though: a little smoother and more refined, with tight, weighty bass. Plus there's now a mic and button for smartphone use.	<b>£40</b> ★★★★★
<b>5</b>		<b>Sony MDR-EX650AP</b> If you're prepared to pay a little extra for your in-ears, these Sonys are even better than the SoundMagics above. The sound is that bit bigger, a little more detailed and a little more grown-up, and if you don't like the brass finish there's a silver version.	<b>£60</b> ★★★★★
<b>6</b>		<b>Bose QuietComfort 25</b> The best kind of silence is the kind you then fill with sweet, sweet music, and that's what the QuietComfort 25s give you. The active noise-cancelling quells office hubbub, air-conditioning and aeroplane hum, and delivers cracking sound in its place.	<b>£250</b> ★★★★★ <b>BEST FOR SHUTTING OUT THE WORLD</b>
<b>7</b>		<b>Soul Electronics Flex</b> These simple in-ears are brilliant for workouts, as they stay put thanks to the comfortable and unobtrusive ear-hooks. Sound quality is excellent, with crisp treble notes, clean vocals and even a decent amount of bass for the money.	<b>£45</b> ★★★★★
<b>8</b>		<b>Philips Fidelio M2BT</b> Building on the award-winning M1BT, Philips has added NFC for its new Bluetooth headphones and swapped the dark blue design for an understated black finish. The smart built-in controls and rich sound performance remain.	<b>£200</b> ★★★★★ <b>BEST FOR GREAT SOUND WITH NO WIRES</b>
<b>9</b>		<b>AKG Y50</b> The bright colour options (they're available in yellow, teal and red, as well as black) and massive logo have a slight try-hard feel about them, but the Y50s make up for it by sounding loads better than the more 'street' on-ear headphones out there.	<b>£60</b> ★★★★★
<b>10</b>		<b>Sennheiser Momentum</b> Classically styled, cushion-comfortable and smooth-sounding, the Momentums are the perfect over-ears for the dapper man about town. There's also an on-ear version, smaller and cheaper at £100, available in pink, blue, green, brown and, um, 'ivory'.	<b>£175</b> ★★★★★

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Second time around the curved phone makes a lot more sense

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- 1 Motorola Moto X (2014) ★★★★★
- 2 LG G3 ★★★★★



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<b>HOT BUY</b> <b>1</b> 	<b>Sky+HD</b> The new Sky boxes come with built-in Wi-Fi, to make it easier to access on-demand programming, of which there's now more than ever, including pre-release blockbuster films. There's also a 2TB drive available that, with more than 65 channels of HD, might well be worth the outlay. On the move, the Sky Go app is supremely slick. But the most important thing is this: Sky has more movie, TV and sport content – and more of it is unique – than any other service.	<b>STUFF SAYS</b> The only choice for serious TV, movie or sport addicts from £free + £21.50/month ★★★★★
<b>2</b> 	<b>Roku 2</b> Roku's new mid-range offering is the most compelling yet. It is essentially identical to the Roku 3, just without the smart remote. With a customisable feed, Netflix, Now TV, Google Play, YouTube and all the UK catch-up services, it's unbiased, slick and simple.	£60 ★★★★★
<b>3</b> 	<b>Sony BDV-N5200</b> A whole (home) cinema (minus a telly) in one box? That's the Sony BDV-N5200. A Netflix-toting Blu-ray player, an amplifier, five speakers and a subwoofer, all for a lot less than an iPhone 6. There's even a wireless adapter for the rear speakers.	£355 ★★★★★
<b>4</b> 	<b>Sonos Playbar</b> A characteristically Sonos take on the soundbar, the Playbar hooks up to your TV via its single optical input and fills your room with a big, detailed sound. And as with all Sonos kit, it can stream your own music files, Spotify and more as part of a multiroom system..	£575 ★★★★★ <b>BEST FOR STREAMING MUSIC</b>
<b>5</b> 	<b>Sony BDP-S7200</b> Sure, you can pick up a Blu-ray player for just £50 these days, but if you're serious about your movies then you want to make sure they look and sound crisper than a Kettle Chip. That's where the S7200 comes in. It even throws Netflix and iPlayer into the bargain.	£180 ★★★★★
<b>6</b> 	<b>Yamaha YSP-2500</b> If your only requirement for a soundbar is that it should sound better than your telly, almost any will do; but if you want one that will fool your ears into thinking they're surrounded by actual speakers, you want the amazingly clever Yamaha YSP-2500.	£700 ★★★★★
<b>7</b> 	<b>Virgin TiVo</b> Hardware-wise, the taste-learning TiVo is a Sky+HD-beater, but it loses out on content. Mind you, subscribers to the 'XL' package now have free access to all the BT Sport channels: Premier League football, MotoGP and more, in lovely HD.	from £free + £24/month ★★★★★
<b>8</b> 	<b>BenQ W1400</b> What's better than <i>Inception</i> ? <i>Inception</i> on a 300in screen, that's what. How do you get a 300in screen in your house? You buy the BenQ W1400. If your lounge isn't that big it can also project an 84in image from just 2m away. Try finding an 84in TV for this price.	£1000 ★★★★★
<b>9</b> 	<b>Humax DTR-T2000</b> Building on the success of the DTR-T1010, Humax has treated us with a more refined version of their suscription-free YouView box. This faster and more compact device has a huge variety of catch-up offerings for your sofa-time, but there's still no sign of Wi-Fi.	£175 ★★★★★
<b>10</b> 	<b>Google Chromecast</b> This USB memory-stick-sized cord-cutter is compatible with Netflix, YouTube, Google Play movies and BBC iPlayer: a cheap, simple way of getting web-sourced movies and shows onto your living-room TV.	£30 ★★★★★

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<b>HOT BUY</b> <b>1</b>	 <b>LG 55EG960V</b> We knew that one day OLED and 4K would be joined in holy matrimony, and that the results would be rather special. That day is now upon us and 'special' doesn't quite do it justice. This 55in LG is the new pinnacle of TV tech and performance, combining the unbelievable colours, contrast and brightness of OLED with the super-sharp, ultra-detailed images of 4K to create a picture that's more real and enticing than looking out of the window.	<b>STUFF SAYS</b> It's mighty pricey, but if you're after the finest flatscreen known to man, this is currently it <b>£3800 ★★★★★</b>
<b>2</b>	 <b>LG 55EC930V</b> Not everyone's got £4000 to blow on a flatscreen, and if you have to choose between OLED and 4K it's OLED we'd take right now. The awesome colours, super-deep blacks and amazing contrast will make everything you already watch look extra-amazing.	from <b>£1800</b> <b>★★★★★</b>
<b>3</b>	 <b>Samsung UE65JU7000</b> If you're going to go 4K, best do it big. Samsung's latest 65in Ultra HD offering is a beauty with the screen on or off, and the open-source Tizen UI is very snazzy. The processor and inputs are still in a separate little unit than can be upgraded in the future.	<b>£2750</b> <b>★★★★★</b>
<b>4</b>	 <b>Samsung UE55JS8500</b> Each of its 8.3million pixels is put to good use, filling the screen's handsome real estate with pin-sharp outlines, potent contrast and eye-popping colours. Sound-wise, it's way more powerful than bog-standard flatscreens. Worth the pretty penny? Oh yes.	<b>£1890</b> <b>★★★★★</b>
<b>5</b>	 <b>Sony KDL-50W829B</b> 4K a bit too new-fangled (or pricey) for you? How about a 50in edge-lit LED LCD with all of Sony's smart features for well under a grand? It's not even like picture quality's been sacrificed – this is an absolute corker of a telly in every way.	<b>£680</b> <b>★★★★★</b> <b>BEST FOR AFFORDABLE BRILLIANCE</b>
<b>6</b>	 <b>LG 55UF950V</b> This telly comes to life in a flash, and menus don't waste time loading – it's a glossy double-page advert for pixel-packing 4K technology. The punchy palette revels in dazzling hues, deep blacks and Essex-smile whites, and the sound is solid.	<b>£2200</b> <b>★★★★☆</b>
<b>7</b>	 <b>Sony KDL-32W706B</b> There's nothing wrong with sticking with a smaller TV, but you should still make sure you pick a good 'un. This 32in Sony is the best, in terms of both picture performance and features, which include 1080p resolution and all the smart stuff you can handle.	<b>£270</b> <b>★★★★☆</b> <b>BEST FOR A SMALLER SCREEN</b>
<b>8</b>	 <b>Sony KD-55X8505B</b> If you want to jump on the 4K bandwagon with Sony you could go for the wedge-shaped X9, which is great, but we'd suggest that this slimmer, less intrusive 'entry-level' 55-incher is an even better buy. It's still got all the smart stuff and great performance.	<b>£1300</b> <b>★★★★☆</b>
<b>9</b>	 <b>LG 42LB700V</b> The performance is very good, but what makes this 42in LG really special is its webOS user interface, which treats all sources, apps, recordings and live broadcasts equally, getting you to the content you want to watch quicker. And isn't that what a TV is for?	<b>£500</b> <b>★★★★☆</b>
<b>10</b>	 <b>Polaroid 55 4K</b> Fancy a 4K TV but not keen on remortgaging your house? Polaroid (yes, the camera company) has just the ticket: its debut 4K telly is just £700. The catch is that it can't stream the 4K goods from services like Netflix – which is a bit of a bummer.	<b>£700</b> <b>★★★★☆</b>

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<b>HOT BUY</b> <b>1</b>		<b>Apple MacBook Pro 13in (2015)</b> Apple hasn't changed too many parts of the MacBook Pro for 2015. There's a fancy new trackpad and the latest generation of Intel CPUs, which deliver better stamina as well as a chunk more power. This is an incremental upgrade, but given how good the Pro already was, that's more than enough to keep it right at the top of the laptop honours list. If you need power as well as stamina and portability, this is one of the best laptops money can buy.	<b>STUFF SAYS</b> If it ain't broke... it hasn't radically changed, but the Pro's performance and trackpad are top of its class from £1000 ★★★★★
<b>2</b>		<b>Asus ZenBook UX305</b> Asus knows what it's doing. It knows that the Apple MacBook Air laptops are treading water and the ZenBook UX305 is pretty much everything the 2015 Air should have been, with its fetching aluminium design and as good a display as any £1000 laptop.	from £650 ★★★★★
<b>3</b>		<b>Microsoft Surface Pro 3</b> The fact that it's the only device to feature in two of our Top Tens is a testament to the Surface Pro's versatility: it's a strong tablet, but its full-fat operating system and powerful innards mean it's also a worthy adversary to Ultrabooks and MacBooks.	from £750 (with Type Cover) ★★★★★ <b>BEST FOR WORKING ANYWHERE</b>
<b>4</b>		<b>Aorus X3 v3</b> This high-end gaming PC is packed into one of the smallest chassis we've ever seen, complete with a drool-worthy Ultra-HD screen, good sound quality and all the storage you'll ever need. It is pretty pricey, but it will keep you at the top of your game.	£1270 ★★★★★
<b>5</b>		<b>Apple MacBook (2015)</b> This is no 'Air', nor 'Pro': a clear sign that this is what Apple sees as the future of the ultraportable laptop. And it's certainly very desirable: a 12in lean machine with a superb screen and haptic touchpad. The lack of ports can be frustrating, though.	from £1050 ★★★★★
<b>6</b>		<b>Toshiba Chromebook 2</b> Toshiba has created the most desirable Chromebook to date with some well-judged upgrades. Smaller, lighter and great value, the screen's resolution now has pin-sharp HD and the Skullcandy speakers are distortion-free. It lasted eight hours on test.	£190 ★★★★★ <b>BEST FOR VALUE FOR MONEY</b>
<b>7</b>		<b>Apple MacBook Air 13in (2015)</b> Apple is scraping by with pretty much the same Air design as before. You get a new processor, new connectors and slightly improved battery life, but still no Retina screen. However, if a portable road warrior is what you're after, this is still a great choice.	from £690 ★★★★☆
<b>8</b>		<b>Google Chromebook Pixel</b> The new Pixel comes within a hair's breadth of five stars. With its pin-sharp screen and class-leading design, it is a superb laptop. But it's a superb laptop that still only runs one browser. Still, you could always install Ubuntu on it...	from £800 ★★★★☆
<b>9</b>		<b>Lenovo Yoga Pro 3</b> The third entry in the Yoga Pro line refines the laptop/tablet hybrid design with a power-sipping new Intel Core M processor plus slimness and style to make even the MacBook Air look worried. And you can stand it up like a tent. If you want.	£950 ★★★★☆
<b>10</b>		<b>Gigabyte P37X v3</b> This is a super-powered gaming laptop that's a lot slimmer and a bit lighter than other fraggers, while still offering the same grade specs as much larger machines. The fans can get pretty noisy so it's not without niggles, but this is still a very serious machine.	from £1700 ★★★★☆

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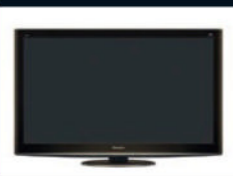


#### Samsung Galaxy S

£420

**Stuff said** Samsung's latest handset flatters Apple with its imitation but has some treats of its own to offer, not least a radiant Super AMOLED screen. Even in bright sunshine it's quite easy to view pictures. It comes with Android 2.1 (Eclair), with the 2.2 (Froyo) update soon.

★★★★★



#### Panasonic TX-P50VT20B

£2300

**Stuff said** The first 3D plasma we've tried, Panasonic's latest is as fully loaded as TVs get. Once you've fine-tuned it, the picture is sublime, with sharp edges and little or no obvious motion blurring. There's life in plasma yet!

★★★★★



#### Fusion Garage JooJoo

£335

**Stuff said** Cheaper than an iPad, with a bigger 32.5cm screen, the JooJoo has great potential... but there are too many niggles to make this a truly useful tablet. The antics of this super-sized tab are reliant on Wi-Fi and a glitchy interface. Best avoided for now.

★★★☆☆



#### Orbitsound T12






£300

**Stuff said** An iPod-friendly soundbar that comes with a subwoofer in tow: it's an interesting idea, but we're not convinced by the sound quality. There's a lack of refinement and a general rawness to it that we didn't get on with, and the two parts do not integrate well.






★★★☆☆



## HOME COMPUTERS

HOT BUY	1		<b>Apple iMac</b> Other than regular power upgrades and a bit of slimming, the iMac has been largely unchanged for a while, but it does now run Apple's lovely Yosemite OS. There's also now a more affordable version and an eye-wateringly expensive 5K model.	from £900 ★★★★★	<b>BEST FOR</b> ALL-ROUND BRILLIANCE
	2		<b>Sapphire Edge VS8</b> This mini-PC may look like the Terminator's lunchbox, but it houses AMD's 1.6GHz A8 APU and dedicated HD7600G graphics with 4GB of RAM. A capable little fellow, the VS8 even does a decent job with the latest gaming titles (with the detail dialled back a little).	from £260 ★★★★★	<b>BEST FOR</b> COMPACT POWER
	3		<b>Alienware X51 (2014)</b> The X51 hasn't changed a huge amount, but the wee size matched with powerful components make it perfectly suited to HD gaming. Steam Machines are going to liven this market up but right now it's the best balance of power and form in PC land.	from £600 ★★★★★	
	4		<b>Raspberry Pi 2</b> Tastier than ever, the reworked Raspberry Pi 2 is more grown-up and still just as cheap. The key upgrade here is the processor, now with four cores and double the RAM, from 512MB to 1GB. The Pi 2's speed has vastly improved but it still needs a microSD to boot.	£30 ★★★★☆	
	5		<b>Zotac ZBOX Sphere OI520</b> About the size and shape of a cannonball or cantaloupe, this striking sphere will certainly draw attention. For media playback it's perfect, but high-end gaming is a no-go due to low frame rates. However, even in full swing it barely raises a decibel.	£350 ★★★★☆	

## GAMES CONSOLES

HOT BUY	1		<b>Sony PlayStation 4</b> It may not quite be the finished article, but this is the best games machine on the planet. It has whisper-quiet operation, a sleek form and bags of power, with full 1080p on all titles and not a whiff of lag. When proper media streaming arrives, it'll be unstoppable.	from £275 ★★★★★	
	2		<b>Microsoft Xbox One</b> This is very different to the Xbox One of 2013. Most significantly, the unpopular Kinect feature is now out of the deal, allowing Microsoft to drop the price and releasing enough extra power for developers to make their games look and play better.	£255 ★★★★★	
	3		<b>Alienware Alpha</b> It's not quite a PS4 or Xbox One-beater, but this is the most console-like PC there's ever been. Steam is the main interface, but it runs on top of Windows for maximum game compatibility, and performance is very impressive.	from £430 ★★★★☆	
	4		<b>Sony PS Vita Slim</b> If you're serious about gaming on the go, the Vita is way better than a smartphone, and when you get home you can play your PS4 games in bed thanks to Remote Play. That's gaming decadence, right there.	£140 ★★★★☆	
	5		<b>Nintendo Wii U</b> While it hasn't had the same impact as the original Wii, don't underestimate the U's fun factor. Nintendo's bottomless bag of superb game franchises rolls on with the excitement of <i>Mario Kart 8</i> , with its anti-gravity karts and submarine racing.	£150 ★★★★☆	

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## WEARABLES

HOT BUY	1		<b>Apple Watch</b> Apple's Watch is by no means the first smartwatch, but it is the most desirable. It's more luxurious (and yes, more expensive) than its rivals, its software is better thought out, and in the coming months you'll see an explosion of new apps for it.	from £300 ★★★★★	<b>BEST FOR</b> TECH YOU WANT TO WEAR
	2		<b>Pebble Steel</b> The Steel keeps the straightforward looks, crisp display and five-day battery life that helped the standard Pebble win our hearts. But it holds more memory, apps and customisable faces, and swaps the plastic for a stylish metal suit.	from £150 ★★★★★	<b>BEST FOR</b> BATTERY LIFE
	3		<b>Fitbit Flex</b> The Flex delivers all of Fitbit's activity-tracking smarts but in a form factor that's less fiddly than its belt-clip counterparts. The tiny module fits in Bluetooth, NFC, a buzzer and an LED display. See also the Fitbit Charge, with numeric display, for a few quid more.	£55 ★★★★★	
NEW	4		<b>Jawbone UP3</b> With its latest band, Jawbone has delivered meaningful fitness data in a stylish package. The splashproof UP3 is unobtrusive, lasts over five days and does well not to overwhelm you with stats; instead it provides useful information at relevant times.	£130 ★★★★★	
	5		<b>Motorola Moto 360</b> With its circular design, this is a smartwatch that's actually a smart watch. The Moto 360's our favourite and most comfortable Android Wear watch so far, but its battery life might make you anxious and it's a few specs short of brilliance.	£150 ★★★★★	

## SMARTHOME

HOT BUY	1		<b>Nest Learning Thermostat</b> Nest has a smart design paired with a ton of features to control your heating in style. We recommend making use of its IFTTT channel: it offers map-based geofencing, or you can fire off the boiler with a text. There's even voice control via Google Now.	£180 (with installation) ★★★★★	
	2		<b>Synology DS214se</b> Within this entry-level hardware beats the best NAS (network attached storage) software yet. Not gorgeous to look at, but at least it's small and easy to hide away. If you're new to the NAS party, the DS214se is the cheapest way to get onboard.	£115 ★★★★☆	<b>BEST FOR</b> BACKUP AND STREAMING
	3		<b>Honeywell EvoHome</b> Set schedules to control the precise temperature of each individual room of your family home, using either the tablet-like central controller or the free Total Connect Comfort app. It's a big old investment, but you'll soon pity anyone living without it.	£250 + £70/radiator + installation ★★★★★	
	4		<b>Philips Hue</b> Pair these smart LED bulbs with 'recipes' on ifttt.com – set them to change colour with the weather or when it's time to run for the train. They also tie in with Philips' own Ambilight TVs, casting the colours from the screen across your entire room.	from £50 ★★★★☆	
	5		<b>Piper nv</b> This unassuming black cylinder acts as a digital guard dog, watching over your home and emailing you video of unwanted guests. It also links with smart switches and the like, meaning it could act as the hub of your smarthome. Neat.	£230 ★★★★☆	

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## SLRs

HOT BUY	1		<b>Olympus OM-D E-M1</b> The Olympus flagship is armed with the same excellent 16.3MP sensor as its predecessor the E-M5, but has an improved autofocus system, a startlingly good electronic viewfinder and masses of direct controls. Also look out for the E-M10.	£640 (body only) ★★★★★	
	2		<b>Canon EOS 700D</b> Look, it's a new Canon at No2. No, wait, it's the old one. Actually, it's kind of both. The 700D is a minor upgrade over the 650D, keeping its 18MP sensor, flip-out touchscreen and autofocus during video and adding little beyond a new kit lens. Still great, though.	£290 (body only) ★★★★★	<b>BEST FOR ALL-ROUND VALUE</b>
	3		<b>Sony A6000</b> Sony's new system camera may be tiny but it packs a big photographic punch. There may be no optical image stabilisation but the incredible speed and accuracy of the A6000's autofocus is a real highlight, as is its large, clear electronic viewfinder.	£370 (body only) ★★★★★	
	4		<b>Nikon D750</b> It's big and bulky, but otherwise this is one of the most comfortable and intuitive DSLRs money can buy. And with a handy tilt screen and some wireless connectivity features, there's none of the purist snootiness that we saw in the D810.	£1300 (body only) ★★★★★	
	5		<b>Sony A7R</b> We love this camera. It's lightweight but tough and delivers results that outstrip pretty much any other compact system camera on the market. It has a huge full-frame 36.4MP sensor and noise-suppression. Your wallet might weep, but your photo album will sing.	£1070 (body only) ★★★★★	

## COMPACT CAMERAS

HOT BUY	1		<b>Sony DSC-HX60</b> 2014's HX60 isn't a huge departure from its predecessor in terms of its build quality, ease of use, specifications and 30x zoom lens – all of which are excellent. What it does add is NFC and a newer Bionz X processor, making it a slightly nippier performer.	£190 ★★★★★	
	2		<b>Sony DSC-RX100 III</b> If you're looking for the best tiny snapper around, this is it. Excellent image quality, fast autofocus, a useful electronic viewfinder and professional video recording, all squeezed into a truly teeny package that'll fit into your jeans pocket. We're smitten.	£450 ★★★★★	
	3		<b>Panasonic Lumix LX100</b> This is one of the most capable premium compacts on the market – and the LX100's 4K capabilities give it a crucial edge over its rivals. HD video capture and superb stills performance make the Panasonic a star performer when it comes to the basics too.	£470 ★★★★★	
	4		<b>Fujifilm FinePix X100S</b> Fujifilm souped up its fixed-lens retro shooter last year, with faster focusing and a big APS-C sensor. It retains the 35mm (35mm-equivalent) f/2 lens and hybrid viewfinder of the old X100, and a less retro version with black finish is also available.	£550 ★★★★★	
	5		<b>Panasonic Lumix FZ1000</b> Bridge cameras often feel like a compromise, but the FZ1000 is incredibly versatile: a fixed-lens camera capable of shooting fantastic stills and video in almost any situation. And yes, it's nearly the same as the Leica V-Lux 114, but £300 cheaper.	£530 ★★★★★	

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IN CASE  
YOU  
MISSED...  
JUICERS

**KitchenAid Artisan**£315 / [johnlewis.com](http://johnlewis.com)

This is the sort of juice you'd pay £2.50 a glass for in a nice café. It isn't clear, because it's grinding and pressing rather than centrifuging, but the KitchenAid does a superb job of separating skins and stalks from the end product. And it's a nice-looking machine.

★★★★★

**BioChef Slow Juicer**£200 / [lakeland.co.uk](http://lakeland.co.uk)

Where the KitchenAid has a revolving metal blade, the BioChef has a plastic slicer that is noticeably less equipped to handle firmer veg. The juice is excellent but you will probably end up chopping more things by hand first and experiencing the occasional blockage.

★★★★☆

**Philips Viva**£70 / [philips.co.uk](http://philips.co.uk)

This great-value machine was the only one to make completely transparent juice, so it's the one to go for if you're a 'no bits' devotee – although it's worth pointing out that we found the cloudier juices had a lot more flavour. It's easy to rinse off and clean.

★★★★☆

**Novis Vita Juicer**£300 / [steamer.co.uk](http://steamer.co.uk)

This tall, heavy machine starts up with a subtle but assertive hum. Its main selling point is the rotating head that juices oranges like a champ; but fruit mash gets into every component, and getting it out of the drum is like cleaning a particularly difficult sieve.

★★★★☆



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# NEXT BIG THING?



## DRONE TOURISM

**D**on't tell me! I know this. Drone must be a town in... Norway?

Surely it would be the capital of the UAV? While geography jokes might well be the highest form of wit, this is no time to gad about. We're talking here about the future of holiday travel. A future where you strap on a VR headset, choose a destination, then soar over it in real time like an airborne Judith Chalmers. A video feed gives you a bird's-eye view of a castle, while you look down your beak at the miserable easyJet hordes below. First Class is now your lovely, comfy sofa.

**Sounds romantic. I suppose you follow it up with a candlelit dinner over Skype?**

That's not a bad idea. It'd halve the washing up for a start. But no, this isn't intended to replace honeymoon trips to Florence. Researchers from the University of Vienna and tourism start-up InformAmuse see it as an aid for those who can't travel, whether for reasons of injury, disability or cost. They've already prototyped a system for remote-controlling drones via a VR headset. And as they rightly point out, livestreamed virtual tours are a lot more earth-friendly than CO<sub>2</sub>-spewing jets.

**All sounds a bit DJI in the sky to me...**

A fine pun, but it seems you've failed to read about [travelbydrone.com](http://travelbydrone.com) on p113. The basic concept is already here, albeit in pre-recorded, 2D form. This project's lead says he's only a year away from a public version that could see you flying over Sicily's Valley of the Temples from a pub in Temple Valley, Hampshire. There are issues to overcome, not least the restrictive no-fly zones over many of the world's biggest tourist sites. But if life's taught us anything, it's that cool technology always finds a way. Now, where's that Google Cardboard clone?

[Words Mark Wilson]

## DON'T MISS THE NEXT ISSUE! ON SALE 2 SEPT





# The best soundbar?

## The experts think so...



Home Cinema Choice 'Best Buy',  
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Trusted Reviews 'Recommended',  
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What Hi-Fi? Awards 2014,  
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AV Forums 'Highly Recommended',  
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